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Badger Alumni Owe Support to New President

Dean Holt Praises Dykstra, Declares University Morale is High

By FRANK O. HOLT
Dean, Extension Division, and Chairman, Faculty Public Relations Committee

An analysis of the student body of a state university is revealing in that which it discloses. Upon the Madison campus are sons and daughters who come from homes representing every social, economic, religious and political opinion which is known in the commonwealth. The student body is a cross section of the people of the state and that, of course, means that the majority come from humble homes, that the greater number represent parents who have not found a high place in the economic and social sun. Such parents are, in most instances, eagerly making sacrifices that they may do better for their children than their parents had done for them and they send son and daughter to the University in the hope and with the belief that the advantages here are the best that can be secured.

The faith of the people in education and the confidence of our citizens in the University is an encouraging sign. In spite of the criticisms frequently levied against it, one meets everywhere obvious eagerness on the part of the people of the state to hear good things about the University. They are skeptical only when they are uninformed, they become enthusiastic when presented with the facts.

Dean F. O. Holt

Our new President, Mr. Dykstra, comes to act as administrative head of a University in a state where university morale is high. He has given evidence that he not only wishes to maintain that high morale but that he intends to improve it. Those of us who have met him are convinced that under his leadership this can be done. But neither Mr. Dykstra nor any other president can accomplish this result alone. He needs support. And among the groups who owe him unqualified support are our alumni.

The present Alumni Association seeks to give the new president support in various ways. One way is through an objective, the purpose of which is to bind the graduates of Wisconsin to their Alma Mater more securely by offering them educational services after they have crossed the threshhold of graduation.

And guided by that objective a University Alumni Institute will be conducted as a part of the commencement program in June of this year. The Institute will serve first as a means of presenting to returning alumni some clear interpretations of the more fundamental work which the University is doing and of the significance of such a program to the state. Seond, it is the purpose of the Institute to create opportunities for the alumni to continue contacts with members of the faculty or with University departments in such fields of intellectual development as an individual alumnus may have interest.

The experiment anticipates a presentation of the following program on Friday, June 19.

1. Certain phases of the completed work of its Science Inquiry which has been under way for three years.
2. The study and recommendation of the state committee on Public Welfare.
3. The light of history on current tendencies, democracy, etc.
4. Interpretation of the state of the University and of the University and the State.

The alumni Institute in a very real way intends to be a service to Alumni but it is equally a call to the colors. Our new president deserves support and this hoped for tie of alumni to the University will, we feel, work in that direction.

Expresses Confidence

Dean George C. Sellery

Faculty Express Hope, Confidence in New President

(Continued from page One)

tent observers from other universities and from educational foundations bear witness to the animation, the drive, the alertness with which faculty and students are still pushing forward in the great activity of education.

This brief story of the continuity and strength of the spirit and purpose of the faculty would lack full significance, if the faculty, under the authority of the Regents, were not so largely responsible for the maintenance and development of our educational policies. *Faculty,* however, in this connection, means president and faculty, for the president of the University is not only its administrative head, with all the responsibilities that position implies, but he is also the chief member of the faculty and its presiding officer; he is the initiator of important faculty policies; his considered judgments receive full faculty co-operation; and it is in the free and harmonious relations between him and the staff that the vigor of the faculty is realized. Our great presidents have been true leaders of the faculty, ruling by influence rather than authority, and thus they have made their great contributions to the development of the University without those reversals, upsets, and chagrins which have been the fate of less democratic institutions of learning.

President Dykstra, I am sure, will rejoice in the abundant opportunities for leadership which will be his in the democratic university of the great State of Wisconsin.

Dykstra Urges Alumni Repledge Selves to U. W.

University of Wisconsin alumni are urged to rededicate themselves to the life and purposes of their University by Clarence A. Dykstra, president-elect of the State University, in his first message to Wisconsin alumni members contained in an "Alumni Letter" sent out recently by the Alumni association at the University.

In his letter, Mr. Dykstra praises the work of the Wisconsin Alumni association in promoting, by organized work, the best interests of the State University, and asks the alumni "to make me a partner in your enterprise as you proceed with your great undertaking." He declared that he was impressed with the platform adopted by the Alumni association for the good of the University.

"It seems fortunate that the new vigor which is stirring among Wisconsin alumni should come in the year of its Diamond Jubilee," President Dykstra said.

"As the chief administrator of the University, I feel sure that I can be of some service in promoting these purposes. I ask you, therefore, to make me a partner in your enterprise as you proceed with your great undertaking.

"I ask you as Alumni of the University to rededicate yourselves to its life and its purposes, as I now dedicate myself with all my strength and zeal to the future of the institution which you have helped to make great and which I am sure you wish to maintain as one of the great universities of the United States."

FORWARD WITH DYKSTRA

________________, 1937

Wisconsin Alumni Association,
770 Langdon Street, Madison, Wisconsin

I want to do my share in carrying out the primary objective of the Association as expressed by its founders: "to promote by organized effort the best interests of the University of Wisconsin". Accordingly, here is my check for four dollars for a year's membership.

Name ____________________ Class ________
Address ____________________________
City ____________________ State ________
Occupation __________________________

(Please print or type to insure accuracy in Diamond Jubilee Directory)

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Bulletin of the University of Wisconsin

Serial No. 2239
General Series 2023

ALUMNI NEWS

Entered as Second Class Matter
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Faculty Express Hope, Confidence in New President

Wisconsin's Great Faculty Plays Important Part in University's Progress

By GEORGE C. SELLERY
Dean of the College of Letters and Science

The faculty of the University looks forward with hope and confidence to the leadership of President-elect Dykstra.

This faculty would be recognized by any former student who was here at any time since the beginning of the present century as essentially the sort of faculty he knew. The continuity is unmistakable. Turner, Haskins, Slaughter, Harper, Frankenburger, Reinsch, Munro, Babcock, Dean Johnson, Dugald Jackson, Ely, Fish, B. H. Meyer, Mendenhall, Dean Henry, Dean Richards, —to mention only a few of the great professors who were at Wisconsin in the first years of this century and are no longer here—these men, and others of similar caliber, and the great presidents who helped to inspire them, have left us. And yet their attitudes toward life, their love of scholarship, their belief in students, their confidence in the people, their vision of the University as transcending and yet uniting and enriching colleges and departments, all these nobler qualities are alive in the University. I am sure that the survivors of this group would in turn insist that it was their predecessors who initiated them into the free brotherhood of the faculty of Wisconsin.

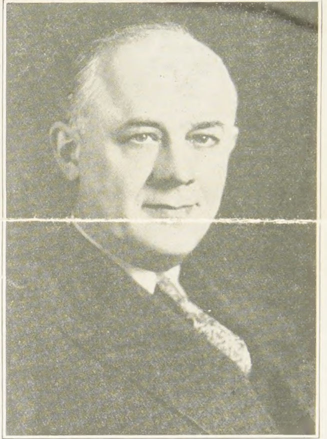
I do not here attempt to explain just how the great men of the past live on in the University of to-day. And I am at a loss to tell exactly in what ways our State of Wisconsin, the land and the people, composite in origin but united in aspiration, has through the years molded the faculty, gathered from near and far, into an epitome of itself. People and faculty alike are patriotic, forward-looking yet cautious, hostile to fanaticism and racial antagonisms, genuinely democratic, respectful of work, scornful of "side" and "high hat", free in speech and forthright in deed.

The personnel of the present faculty is widely different from that of the early years of the century, although the changes have been hardly noticeable from year to year. Its eminence is still a matter of deep satisfaction to the State. Our losses to other institutions have been about balanced by our gains. The increasing grants of the Alumni Research Foundation and the regular legislative appropriation of funds in aid of special investigations have helped enormously in retaining and recruiting for the university outstanding men and women for whom facilities for research are more important than a decrease or increase in salary.

The morale of the faculty has stood the test of the depression, with its lowered salaries, retarded promotions, increased class and conference assignments, and lessened hours for study and research. It has stood the test of the gradual lifting of waivers in neighboring institutions, although the strain is beginning to tell. Compe-

(Continued on page Four)

Wisconsin's New President


Clarence A. Dykstra

Alumni Welcome Dykstra as New University Leader

Election of Dykstra Brings Alumni Nearer Their Goal, Bullis Declares

By HARRY A. BULLIS
President, Wisconsin Alumni Association

Another bright new day is dawning at Madison, giving every alumnus a renewed opportunity for serving our University in its progress "Forward!" The membership of the Wisconsin Alumni Association is happy to welcome Clarence A. Dykstra as the new leader of the University. The Officers and Directors of the Association are looking forward with pleasure to working with him on all projects where mutual action will result in furthering the best interests of the University.

We not only intend to work with President Dykstra in a sincere effort to maintain Wisconsin's leadership among American universities, but also to support aggressively every plan to raise its prestige to even greater heights. We believe that the election of Clarence Dykstra to the presidency will serve to bring alumni nearer the goal for which the Association constantly and consistently works: "to promote by organized effort the best interests of the University of Wisconsin."

During the past year the Alumni Association has grown—in enthusiastic spirit, in numbers, and in the scope of its activities. A. John Berge,

(Continued on page Two)

Dykstra is Named 11th President of State University

Regents' Choice Meets With Wide Approval from Students, Alumni, Faculty

Clarence A. Dykstra, city manager of Cincinnati, Ohio, since 1930, has been named 11th president of the University of Wisconsin by the State University board of regents.

Appointment of Mr. Dykstra as president of the University was unanimously recommended by the regents executive committee, which during the past two and one-half months had interviewed more than 30 men for the position. In making the recommendation, which was approved by the board at its recent meeting, the regents' committee revealed that it had conferred with the University committee of the faculty several times during its consideration of presidential possibilities.

"We are unanimously of the opinion that Mr. Dykstra is the best qualified of all persons of whom we have any information for the position," the regents' committee asserted in its report. "We are further of the opinion that he would be an ideal choice. His educational and administrative experience, in our judgment, pre-eminently fit him for the position. His record is one of great competency and highly successful achievement in every piece of work he has undertaken.

"His record of public service amply justifies our confidence that he can and will cooperate fully with the ideals and spirit of Wisconsin. We are fully satisfied that as president he would fully and cordially cooperate with the faculty, regents, staff, alumni, students, and all the people of Wisconsin in promoting the best interests of the University and the state. We are pleased at the overwhelming approval which this recommended choice has received."

To Come May I

Mr. Dykstra's official term as president of the University will commence next July 1, but it is expected that he will come to the campus earlier, possibly about May 1, to become familiar with immediate problems of the University.

President and Mrs. Dykstra visited Madison and the University on March 30 and 31. A reception was held to enable the faculty to meet them. More than 1,500 faculty members and their wives shook hands with the new President and Mrs. Dykstra during the reception, which lasted more than two and one-half hours. President Dykstra was also honor guest at the annual banquet tendered the legislature and state officials by the Madison and Wisconsin Foundation on March 31. He was given a rousing ovation when he was introduced to the 500 persons present, including practically all of the members of the state legislature.

Mr. Dykstra, before becoming city manager of Cincinnati, achieved renown both as an educator and an administrator. Born Feb. 25, 1883, in Cleveland, Ohio, he received his A.B. degree from the University of Iowa in 1903. He was fellow in history and assistant in political science at the University of Chicago in 1903–04.

(Continued on page Three)

Alumni Welcome Dykstra as New University Leader

Alumni Are Urged to Renew Their Allegiance to Their Alma Mater

(Continued from page One)

Executive Secretary, has been on the job for a little over a year. In that short time he has rejuvenated the Association. One of his first actions was to start a Diamond Jubilee Membership Drive during this seventy-fifth anniversary year of the Association. This drive has built up the membership very materially, and on the promise of continued growth, the Association has increased the specific services which are offered to members so that they now include:

1. Annual subscription to the Wisconsin Alumnus, ten monthly issues during the school year, which give all the news of current interest concerning the University and the Alumni. Under Editor Harry Thoma's direction, this magazine has developed rapidly until it is outstanding in its field—an alumni magazine to be proud of.
2. The Stuhldreher football letters, one after each game during the season, reviewing the high lights of the game, and giving current football gossip of interest to Wisconsin supporters.
3. Special letters, of which there have been five so far this year, covering matters of particular interest to Alumni, issued at irregular intervals as the occasion develops.
4. The Annual Directory of Association members, issued in conjunction with the July issue of The Wisconsin Alumnus.

All of these services, except The Wisconsin Alumnus, have been new developments of the past year, and the magazine has been built up so materially during the year that it is practically a new service.

These services represent definite, tangible values which have come to every member of the Association this year. They will be continued next year on an even more comprehensive scale—*provided* sufficient alumni give us the necessary financial support by joining the Association.

Harry A. Bullis

In addition to these tangible services, each one of us who has the interests of the University at heart must realize that we owe an obligation to maintain an active, alert Alumni organization, which makes itself felt as a force for good in the life of the University. We have that organization today, and we intend to maintain it. Will you help?

This is definitely an invitation which I urge you to accept, and to accept NOW! In order to maintain the organization of the Alumni Association on its present basis and to continue to furnish its members with the present services, we must have more members who will pay dues from year to year. There is no other way to secure the life blood which keeps the organization functioning as it must.

If you are not a member, please fill in the membership blank in another column in this bulletin, and send it with one year's dues to the Alumni Association office at Madison. If you are a member, please talk to every one of your alumni friends and urge them to join us, so that they all may receive the Association services.

Praises Dykstra

Harold M. Wilkie

Regent President Praises Dykstra as Ideal Choice

Predicts Great Progress for University Under New President

By HAROLD M. WILKIE
President, Board of Regents

The Regents are very thankful that it has been possible to secure the services of Clarence A. Dykstra as President of the University. We are convinced that he is an ideal choice for the position. His educational and administrative abilities, together with his public spirited and liberal attitude of mind, eminently fit him for the leadership of the State University of Wisconsin. Whatever he has done, he has done well. Most of his important tasks have been in public work. He comes in a spirit of enthusiasm and with an earnest desire to cooperate with the entire faculty and administrative staff, the students, the alumni and citizens of the state.

We are deeply gratified that his appointment has met with such universal approval and enthusiasm. Mr. Dykstra's nature is well suited to securing cooperation as well as to meeting difficult situations firmly and effectively. All groups interested in the University are cordially welcoming him and Mrs. Dykstra.

Mrs. Dykstra already has many friends in Wisconsin. She has been a great aid to her husband and has done successfully much public work.

There is every reason to believe that the University of Wisconsin is entering on a period of great improvement. In bringing that about, we feel that this appointment is of vital importance. We are confident that Clarence A. Dykstra will make himself intimately a part of the University organization; that he will lead well and understandingly; that he will command confidence and will ably and diligently work with the University staff toward improvement throughout the University. We are sure that cooperation will be extended to him by all persons and groups who have at heart the success of the University. Under these circumstances, we predict greater progress than ever before.

The Regents most cordially and heartily welcome Mr. and Mrs. Dykstra and wish them every success in their new work and in all their relations here.

Students Praise Selection of New U. W. President

New President Will Find United Student, Alumni, Faculty Body

By HALLIE LOU WHITEFIELD
President, Women's Self-Government Association

The main concern of every University student, next to getting an adequate education, is that his Alma Mater maintain an inviolable position in the academic sun.

To Wisconsin students, this concern is particularly important in view of the splendid standing and the rich prestige their University has enjoyed in the eyes not only of the academic but of the practical world.

Student elation then, over the coming of Clarence Addison Dykstra as president of the University is pardonable. It is doubly so not only because Wisconsin is getting a man nurtured in educational ideology, but at the same time a man whose record in the practical field of administration has been tested by time and reached its apex in the swirling of flood waters.

Wisconsin students guard like a jealous mistress the Wisconsin Idea which has burgeoned out under the University's past great presidents. This heritage the board of regents has seen fit to place under the supervision of Mr. Dykstra.

That Mr. Dykstra will cherish this heritage, that he will add to it his vast practical knowledge gained as chief administrator of the city of Cincinnati, and that he will guide the University along that untrammeled path toward scholarship and truth which has been the unerring goal of its founders and supporters, neither the faculty nor the students for one moment doubt.

The University has battled the storm of depression with trimmed sails. The time is now appropriate for full sails. With the breeze of public opinion that has greeted the appointment of Mr. Dykstra, students look forward to steady progress along the well-defined course already mapped out.

Not through mere curiosity do students look forward to the coming of the new president; rather it is with the determination that upon his arrival the new president will find a united student, alumni, and faculty body ready, willing and able to make his debut an auspicious one.

Students can not spend four of their most important years at the University without leaving a part of themselves behind. That part is the plastic ideal of youth, the brave and adolescent period.

Students whose parents work on farm and in factory join with them in wishing Mr. Dykstra the best of administrations.

Because of his vast experience as an administrator he can not fail to keep Wisconsin in its proud place in the vanguard of American universities; because of the unanimous support from citizens, alumni, faculty, and students, he will not fail.

Upon taking office as acting president, Dean George Clarke Sellery told the University faculty: "Lift up your hearts."

In answer to President Sellery the student body can reply:

"It has been done!"

Dykstra is Named 11th President of State University

Former U. W. Student Praises New Prexy for Outstanding Life Work

(Continued from page One)

He taught in private schools in Pensacola, Fla., for two years, and in 1907 became an instructor in history and government at Ohio State University. In 1909 he was made professor of political science and head of the department at the University of Kansas, a post which he held until 1918. In the latter year, he became executive secretary of the Cleveland Civic league, and in 1920, became secretary of the Chicago City club.

Taught in California

Two years later, he was made secretary of the Los Angeles City club, a position he held until 1926. From 1923 to 1926 he was also commissioner of the Los Angeles water and power department, and from 1926 to 1930 he was the department's director of personnel and efficiency. During the same years, he served as president of the Insurance Plan Building and Loan Co. From 1923 to 1929 he was also professor of municipal administration at the University of California.

Mr. Dykstra became city manager of Cincinnati in 1930, and since that time has been recognized as a pioneer in many matters of municipal administration. He achieved particular renown during the recent Cincinnati flood.

In 1932–33 Mr. Dykstra was president of the International Association of City Managers. He was also a member of the executive committee of the U. S. Conference of Mayors and first vice president of the American Political Science association.

Mr. Dykstra was a member of the advisory board of the Public Works administration and of the Ohio advisory committee of the U. S. Employment service.

He is a member of Delta Upsilon fraternity and Phi Beta Kappa honorary scholastic fraternity, and various other social and professional organizations. He is a member of the Dutch Reformed church. He has contributed to many periodicals.

In 1909, Mr. Dykstra was married to Ada M. Hartley, who died in 1926. He wed Lillian Rickaby in 1927. He has a daughter, Elizabeth, and a step-son, Franz Lee.

Pictures New President

A clear picture of President-elect Dykstra is contained in an article recently written by a former Wisconsin student, Robert N. Gorman, who is now judge of Cincinnati court of common pleas. In this article, which was written prior to Mr. Dykstra's selection as president, Judge Gorman declares:

"Clarence A. Dykstra should make the ablest and most popular educational administrator in the country. This is a broad statement, but to those who know him, it is not an exaggerated one. He would bring to the University of Wisconsin not only a training in educational fields, but a practical experience that fits him to take advantage of every opportunity that the University affords.

"Mr. Dykstra has been an educator. He has kept in touch with problems touching University life, for he has frequently been called on to explain intricate and modern methods of municipal government. But it is not sufficient to have just an educator at the head of a university. In this day when matters of business and educational policy in a university are undergoing changes, an able administrator is needed.

Business-Like Educator

"In this field Mr. Dykstra would be pre-eminent. If selected for the post, the public money will be expended to the best advantage consistent with the welfare of the people of the state and the student body.

"In the same manner I know that he would be most considerate of the problems of the faculty. He would always endeavor to carry out the purposes as he sees them of the University, but would not be opinionated. He believes in preserving much of the old, but at the same time would feel that much can be accomplished by the widespread experimentation in educational fields.

For Faculty . . . For Alumni

"The members of the faculty will be impressed by his charming manner, clear-cut thinking and fairness. He may be hesitant to discard old methods, but he will be ready to listen to changes suggested in curriculum or method, and if convinced of their efficiency will not be hesitant to try the change.

"I am sure that he would attempt to organize the alumni into a cohesive unit for the purpose of furthering the interests of the University. He would look to them for support and guidance. An organized alumni is sorely needed if his program is to receive approbation from the public.

"He would bring to the student body new conceptions of service. He has been not only an educator, but in the administration of public affairs has viewed many of the problems arising from this depression which face the young men of tomorrow. He would endeavor to prepare them for those tests they must meet after graduation.

"Because of his charming disposition and open-mindedness, he would see the problems of the students. Because of these characteristics I predict that as president he would become as popular as the most revered football coach or classroom instructor.

Ahead of Him

"He would come to the University of Wisconsin at the age of 54, with a background of both practical and theoretical experience. He has many years ahead of him of valuable service. While building the University within, he would have but one thought in mind, so far as the people generally of the state are concerned. He would look upon himself as their public servant with a mission to serve them as any public administrator might do."

Wisconsin Alumni Are Celebrating 75th Birthday

Association Celebrates Diamond Jubilee Year With Varied Program

Seventy-five years ago less than a dozen graduates of the University of Wisconsin organized the Wisconsin Alumni Association. During this three-quarters of a century, the University has become one of the leading educational institutions in the world. The student body has grown from 20 to over 10,000. More than 70,000 men and women are alumni of Wisconsin.

In celebrating this seventy-fifth anniversary, the Wisconsin Alumni Association is sponsoring a varied program of activities. Loyal alumni everywhere are co-operating to make this Diamond Jubilee Year the greatest in Association history.

Two coast-to-coast broadcasts over NBC were features of this program of activities. Thousands of alumni gathered at dinner meetings from New York to Honolulu to hear these broadcasts and get first-hand information about the achievements of their Alma Mater.

Last October officers and directors of the Association joined with officers of alumni clubs in a two-day conference to discuss methods of promoting the best interests of the University. This was the first conference of its kind ever held at Madison. At this conference, the Association pledged itself to carry out the following platform during our Diamond Jubilee Year:

1. To maintain Wisconsin's leadership among American universities;
2. To secure every reasonable financial support that the needs of the University require;
3. To support a non-partisan and non-political administration of the University;
4. To develop a citizenry correctly informed regarding University affairs;
5. To make our Diamond Jubilee Year the greatest in Association history.

In carrying out this platform, alumni have always remembered the primary objective of the Association as expressed by its founders seventy-five years ago: "To promote, by organized effort, the best interests of the University of Wisconsin." To make this "organized effort" possible, new alumni clubs have been organized and old ones reorganized from coast to coast. A year ago there were four alumni clubs in Wisconsin; now there are 36, and Association membership has increased 67 per cent.

Publications of Alumni Association

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Two features of the Wisconsin Alumni Association's Diamond Jubilee year are pictured here: The 100-page Jubilee issue of the Alumni magazine, published last summer, contained the first directory of association members. A 1937 directory is now being compiled. The new association magazine, The Wisconsin Alumnus, appeared recently and was cordially received by all members.

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Diamond Jubilee
Wisconsin Alumni Magazine
·1861· Wisconsin Alumni Association ·1936·
Directory Edition
The Wisconsin Alumnus
October

blocks to be finished later and fitted for service in cotton and woolen mills. Formerly nearly all shuttles were made of Turkish boxwood, as it is the best known material for this service, but for more than twenty years the price of boxwood has been so high that the buyers of shuttles cannot afford it. The sapwood of dogwood and persimmon are the most satisfactory substitutes that have yet been found, though trials have been made of numerous other woods. The shuttle used in the power looms must stand violent jars as it is thrown back and forth in the process of weaving. Many woods which have been tried have splintered in a short time. Others wear rough and become useless. Still others, because of softness, wear out too quickly and are rejected on that account. The usual shuttle is about seventeen inches long, and it is expected to give 2,000 hours of actual service. The shuttles are used in pairs and both must have nearly or exactly the same weight, or they can not do the work required. They must not be too heavy or excessively light. It is, therefore, not an easy matter to find all the required qualities in one wood. Though shuttles, spools, and bobbins are usually grouped as one industry, no spools and bobbins were reported in Alabama; but 50,000 feet of hickory was made into picker sticks which are employed in weaving to assist in throwing the shuttles back and forth.

TABLE 9.

BOXES, TOBACCO.

Kinds of wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
Tupelo	3,100,000	96.87	$9.10	$28,200	3,100,000	......
Red cedar	100,000	3.13	20.00	2,000	50,000	50,000
Totals	3,200,000	100.00	$9.44	$30,200	3,150,000	50,000

TABLE 10.

AGRICULTURAL IMPLEMENTS.

Kinds of wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
Longleaf pine	1,100,000	43.65	$20.00	$22,000	1,100,000	......
Shortleaf pine	1,000,000	39.68	16.90	16,900	1,000,000	......
Yellow poplar	180,000	7.14	25.00	4,500	180,000	......
Red gum	100,000	3.97	22.10	2,210	100,000	......
White oak	60,000	2.38	35.00	2,100	20,000	40,000
White pine	30,000	1.19	40.00	1,200	......	30,000
Cottonwood	20,000	.80	31.00	620	20,000	......
Hickory	20,000	.79	40.00	800	20,000	......
White ash	10,000	.40	35.00	350	10,000	......
Totals	2,520,000	100.00	$20.11	$50,680	2,450,000	70,000

TABLE 11.

FURNITURE.

Kinds of wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
Longleaf pine	625,000	33.35	$12.22	$7,640	597,500	27,500
White oak	340,000	18.14	15.96	5,426	199,000	141,000
Yellow poplar	251,000	13.39	16.51	4,145	251,000	......
Red oak	167,200	8.92	13.98	2,338	56,200	111,000
Willow oak	165,800	8.85	14.02	2,324	54,800	111,000
Post oak	100,000	5.34	12.00	1,200	100,000	......
Red gum	55,000	2.94	11.36	625	55,000	......
Hackberry	50,000	2.67	15.00	750	50,000	......
Tupelo	50,000	2.67	11.00	550	50,000	......
Persimmon	25,000	1.33	15.00	375	25,000	......
Evergreen magnolia	15,000	.80	15.00	225	15,000	......
Sweet magnolia	10,100	.54	14.85	150	10,100	......
White elm	10,000	.53	15.00	150	10,000	......
Green haw	9,900	.53	15.15	150	9,900	......
Totals	1,874,000	100.00	$13.90	$26,048	1,483,500	390,500

TABLE 12.

HANDLES.

Kinds of wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
White ash	915,000	53.04	$17.87	$16,350	465,000	450,000
Hickory	765,000	44.35	13.86	10,600	765,000	......
Yellow poplar	15,300	.89	9.80	150	15,300	......
Shortleaf pine	15,000	.87	10.00	150	15,000	......
Red gum	14,700	.85	10.20	150	14,700	......
Totals	1,725,000	100.00	$15.88	$27,400	1,275,000	450,000

TABLE 13.

SPORTING AND ATHLETIC GOODS.

Kinds of wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
Hickory	1,151,000	99.91	$23.26	$26,775	1,151,000	......
Persimmon	1,000	.09	25.00	25	1,000	......
Totals	1,152,000	100.00	$23.26	$26,800	1,152,000	......

TABLE 14.

SHUTTLES, SPOOLS, BOBBINS, ETC.

Kinds of wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
Dogwood	750,000	68.18	$14.20	$10,650	450,000	300,000
Persimmon	300,000	27.27	15.00	4,500	300,000	......
Hickory	50,000	4.55	20.00	1,000	25,000	25,000
Totals	1,100,000	100.00	$14.68	$16,150	775,000	325,000

Fixtures.

The manufacturers of fixtures pay more for the rough material which passes through their woodworking machines than is paid by any other manufacturers of wood commodities in Alabama. High-class lumber is demanded and much of it must be in extra wide pieces. Fixtures, as considered in this report, consist of counters and showcases for stores, bars for saloons, desks and counters for banks, cabinets and shelving for stores, partitions for offices, and certain kinds of furniture built in place and not intended to be moved about as ordinary furniture may be. The wood for counter and desk tops and for panels being frequently of unusual width, is often worked into the desired form by hand. It usually reaches the manufacturer in the rough form, but it has been carefully kiln-dried. Large cabinets, perhaps occupying the entire side of a store, are built by measure and in sections in the factory, and in that form they are taken to the place intended for them and are there set in position. They are too large to handle except in sections. No very cheap wood was reported in this industry in Alabama, but some, as black walnut, birch, and mahogany, cost much more than red gum, chestnut and pine. The beautiful and expensive woods are outside material that is visible in the finished articles, while cheaper and plainer woods go into braces, shelving, drawer bottoms, and other interior parts which ordinarily are not visible. Nearly one-third of the wood reported was not grown in Alabama.

Refrigerators and Kitchen Cabinets.

A few refrigerators are made, but nearly all of the material shown in Table 16 goes into equipment for the kitchen, the principal commodities being safes, tables, and shelving, and half of all the wood used is longleaf pine. Many articles are wholly made of this wood, but in others the shelving and other interior parts are of red gum, yellow poplar, and tupelo. The three oaks listed in the table were employed for outside parts in some of the better class articles made. Some of the red gum and yellow poplar was made into panels, and in some instances such panels were built up of thin sheets of veneer. The table shows that nearly all the wood employed in this industry was grown in Alabama, and that it was all purchased at a low price. It may be noted that ash is not reported in this industry. In most states it is an important wood in the manufacture of refrigerators and kitchen and pantry furniture.

Caskets and Coffins.

Few coffins and caskets are manufactured in Alabama, particularly the better and expensive kinds, but are shipped into the state from outside factories. The rough lumber listed in Table 17 was nearly all manufactured into boxes in which caskets are placed. Without this explanation, the table is misleading. The only woods made into coffins and caskets were longleaf and shortleaf pine, and cypress, the total amount being only 70,000 feet, not ten per cent of the whole quantity shown in the table. Woods reported in the coffin and casket industry are generally expensive, and their cheapness in Alabama is explained by the fact that most of that reported was manufactured into rough boxes. In rural communities many of the coffins in which the dead are buried are made by local carpenters and cabinet makers, and statistics covering that part of the business can not be collected and included in a report like this. In quantity chestnut is the leading wood in Table 17. It is the leading casket wood in many regions, for custom has given it the place, though there is no reason other than the demand of custom why chestnut should hold that position.

Ship and Boat Building.

The boat-building industry in Alabama is not large, considering the abundance of good timber that may be drawn upon, and the long lines of navigation which the rivers afford (about 1,500 miles). Mobile, with its fine harbor, is favored by nature as a ship-building point. The wild China which is reported in this industry in a small amount, is recommended as finish for yachts. It is not, however, a tree that promises any great development for its form is poor, and comparatively few trunks are of sufficient size to make even an indifferent saw log. The wood of different trees varies much in color and also in grain, the difference probably being due to the rate of growth. Wood of light color has much the appearance of ash, though if the growth has been slow the texture of the grain is not so coarse as that of ash. The popular belief that the tree came originally from China and has spread in this country does not appear well founded, for the species grows in a wild state from Georgia and Florida westward to Arizona and Northern Mexico. The tree is sometimes confused with the China tree (*Melia azedarach*), to which it bears as much resemblance in appearance as in name. All the wood used by Alabama boat builders grew in the state.

TABLE 15.

FIXTURES.

Kinds of wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
White oak	500,000	49.02	$25.00	$12,500	450,000	50,000
Longleaf pine	200,000	19.61	22.50	4,500	200,000	......
Birch	100,000	9.81	50.00	5,000	......	100,000
Red gum	50,300	4.93	20.00	1,000	10,300	40,000
Chestnut	50,200	4.92	19.92	1,000	......	50,200
Black walnut	50,000	4.90	40.00	2,000	......	50,000
Yellow poplar	49,700	4.87	25.15	1,250	49,700	......
Mahogany	10,000	.98	125.00	1,250	......	10,000
Shortleaf pine	9,800	.96	18.06	177	9,800	......
Totals	1,020,000	100.00	$28.11	$28,677	719,800	300,200

TABLE 16.

REFRIGERATORS AND KITCHEN CABINETS.

Kinds of wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
Longleaf pine	500,000	49.85	$13.00	$6,500	500,000	......
Red gum	205,000	20.44	12.62	2,588	205,000	......
White oak	156,000	15.55	14.38	2,244	134,000	22,000
Yellow poplar	50,000	4.99	20.00	1,000	50,000	......
Red oak	34,000	3.39	14.00	476	12,000	22,000
Willow oak	33,000	3.29	14.00	462	11,000	22,000
Tupelo	25,000	2.49	11.00	275	25,000	......
Totals	1,003,000	100.00	$13.50	$13,545	937,000	66,000

TABLE 17.

CASKETS AND COFFINS.

Kinds of wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
Chestnut	349,800	39.30	$16.01	$5,600	......	349,800
Longleaf pine	225,200	25.30	13.14	2.960	225,200	......
Cypress	225,000	25.28	14.44	3,250	25,000	200,000
White pine	40,000	4.50	20.00	800	......	40,000
Red cedar	30,000	3.37	35.00	1,050	30,000	......
Shortleaf pine	20,000	2.25	15.00	300	20,000	......
Totals	890,000	100.00	$15.69	$13,960	300,200	589,800

TABLE 18.

SHIP AND BOAT BUILDING.

Kinds of wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
Cypress	210,000	41.10	$15.24	$3,200	210,000	......
Longleaf pine	200,000	39.14	15.00	3,000	200,000	......
White oak	100,000	19.57	15.00	1,500	100,000	......
Wild china	1,000	.19	15.00	15	1,000	......
Totals	511,000	100.00	$15.10	$7,715	511,000	......

Woodenware and Novelties.

Table 19 represents the smallest industry in Alabama separately reported and tabulated. The output consists chiefly of pails and tubs made of black gum. A number of small commodities, grouped under the name "novelties" and made of longleaf pine complete the industry. In most states where wood-using has been studied, woodenware includes washboards, ironing boards, bread boards, chopping bowls, vegetable cutters, pie platters, and many more, but in Alabama these articles are not reported. The state has much timber that might be worked into commodities which are widely used. The industry is in its first stages, but no reason is apparent why it may not expand to large proportions.

TABLE 19.

WOODENWARE AND NOVELTIES.

Kinds of wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
Black gum	200,000	65.57	$10.00	$2,000	200,000	......
Longleaf pine	105,000	34.43	14.19	1,490	102,500	2,500
Totals	305,000	100.00	$11.44	$3,490	302,500	2,500

Miscellaneous.

Table 20 represents odd commodities in quantities too small to deserve mention as separate industries, but they are important and some of the items which are now small may in the future grow to represent valuable industries. The table includes the manufacture of mine rollers, tanks, mirror and picture backs, patterns, picture frames and picture-frame molding, trunks and sample cases, show-window material, and street-sweeping compounds. White pine at $100 per 1,000 feet is one of the highest-priced woods reported in the state. It is carefully selected from the best stock and is thoroughly seasoned. The cottonwood reported was in the veneer form and was used by trunk makers.

TABLE 20.

MISCELLANEOUS.

Kinds of wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
Yellow poplar	53,500	41.80	$17.66	$945	53,500	......
Hickory	25,000	19.53	20.00	500	25,000	......
Black gum	15,000	11.72	25.00	375	15,000	......
Cottonwood	11,500	8.99	42.43	488	11,500	......
Red gum	10,100	7.89	24.75	250	10,100	......
Longleaf pine	9,900	7.73	20.20	200	9,900	......
White pine	3,000	2.34	100.00	300	......	3,000
Totals	128,000	100.00	$23.89	$3,058	125,000	3,000

SUMMARY.

Table 21 is a recapitulation of the nineteen industry tables. It represents the same woods that are presented in Table 1, and the amounts are the same in both tables, but the presentation is different in tables 1 and 21. In the former table each one of the woods is put down according to species and the amount of that species is shown; in table 21 the figures are made out for the industries and without regard to species.

Percentage of Woods Used by Industries.

Some industries use much more of one wood than of another; no one uses all and some demand only two or three. Twenty-one species are found in planing-mill products, and no other industry demands that many. Occasionally an industry takes the whole quantity of a wood used in the state; for example, all of the basswood manufactured in Alabama went into planing-mill products; all the cherry in car construction; all the hackberry and green haw in furniture; and all the wild China in the construction of boats. Table 22 shows how the various woods demanded by manufacturers in Alabama are distributed among the industries.

Cost of Woods by Industries.

Table 23 is the companion or counterpart of table 22. The first shows how the species are apportioned among the industries, the second gives the cost of each wood to the industry that uses it. It is apparent from a glance at the table that all industries do not pay the same price for the same species. One may pay twice as much as another, but the cost is not governed by chance, for in all cases where great difference exists in the cost of a certain wood, satisfactory reasons may be found for it. One may buy the wood in the log; the other may demand it in the form of carefully selected kiln-dried lumber. One may want very high-grade material, another very low-grade. Red gum in the table shows ten average prices among as many industries, and yellow poplar eleven. Basswood, hackberry, green haw and wild china, which are used by only one industry each, have only one price each. A study of the table should make it clear that the prices of lumber in Alabama are not arbitrarily fixed by any man or set of men, but that every buyer purchases the kind he needs at the lowest price he can, and every seller disposes of the kind he has to the buyer who will pay most for it. The totals show nineteen average prices, no two industries paying the same.

Lessening Waste.

Of late years the problem of lessening waste has attracted serious attention in all industries that use wood as raw material for manufacturing. Considerable progress has been made toward the problem's solution, but much yet remains. While collecting statistics in Alabama for this report, all manufacturers who furnished information were asked to give their experience in reducing waste about their establishments. The replies made it plain that manufacturers are interested in this matter and that it is no new problem to them. Most of them have made progress toward its solution.

There are four general classes of wood waste:

First, that which occurs in the woods, and consists chiefly of tops of trees for which logs have been cut. Unnecessarily high stumps are in this class, also the needless destruction of small timber in getting out the merchantable sizes, and the abandoning of small and defective logs.

Second: The waste about the sawmill, consisting for the most part of slabs and sawdust. To this may be added the ends cut from boards to make them of even length.

Third: Waste at the factory. This consists of sawdust, shavings and small blocks and edgings cut from lumber in process of manufacture into finished commodities.

Fourth: The waste which results from the wrong use of wood—using more than need be or a better grade or more costly kind that is necessary.

Some of these wastes are unavoidable at times and under certain circumstances. No business man can be reasonably expected to save when saving costs more than wasting. As much as can be expected of any operator in the lumber business or in any line of manufacturing is to save whatever can be made to pay, and to study the situation to make sure that no opportunity to save is allowed to pass.

Woods Waste.—In favored localities in some of the northern states, hardwood distillation plants make a profit from defective logs and tree tops abandoned in the woods by lumbermen. What would otherwise be left to rot is converted into salable commodities, such as charcoal, acids, etc. This cannot be done in all places. Conditions must be favorable. Alabama's woods waste is largely pine, but it might be saved in the same way as hardwoods in the North. Reports, however, do not indicate that much progress has been made in saving it. Large

TABLE 21.

SUMMARY OF WOODS USED BY INDUSTRIES IN ALABAMA.

Industries—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Alabama, %	Grown out of Alabama, %
Planing-mill products*	584,684,000	80.44	$11.72	$6,852,557	94.82	5.18
Sash, doors, blinds, etc.	67,348,000	9.27	13.10	882,415	96.79	3.21
Boxes and crates, packing	22,442,000	3.09	10.89	244,430	95.85	4.15
Car construction	18,618,900	2.56	19.79	368,490	98.26	1.74
Vehicle and vehicle parts	7,585,000	1.04	24.02	182,200	97.31	2.69
Excelsior	5,700,000	.78	7.97	45,450	100.00	...
Chairs	5,011,000	.69	14.06	70,470	95.81	4.19
Boxes, tobacco	3,200,000	.44	9.44	30,200	98.44	1.56
Agricultural implements	2,520,000	.35	20.11	50,680	97.22	2.78
Furniture	1,874,000	.26	13.90	26,048	79.16	20.84
Handles	1,725,000	.24	15.88	27,400	73.91	26.09
Sporting and athletic goods	1,152,000	.16	23.26	26,800	100.00	...
Shuttles, spools, bobbins, etc.	1,100,000	.15	14.68	16,150	70.45	29.55
Fixtures	1,020,000	.14	28.11	28,677	70.57	29.43
Refrigerators and kitchen cabinets	1,003,000	.14	13.50	13,545	93.42	6.58
Caskets and coffins	890,000	.12	15.69	13,960	33.73	66.27
Ship and boat building	511,000	.07	15.10	7,715	100.00	...
Woodenware and novelties	305,000	.04	11.44	3,490	99.18	.82
Miscellaneous	128,000	.02	23.89	3,058	97.66	2.34
Totals	726,816,900	100.00	$12.24	$8,893,735	94.99	5.01

*Exclusive of 105,000,000 feet of dressed stock which is planed for purpose of saving freight.

distillation plants are expensive, and it is doubtful if small plants will pay with present processes.

Mill Waste.—Much progress has been made in Alabama toward converting mill waste from loss to profit by distillation. Rosin and turpentine are produced. The unoccupied field is still large. Machines for making lath and shingles now use large quantities of slabs and defective logs which formerly were burned. It cannot be called waste when slabs and sawdust are burned under the boilers to produce power, if that is the cheapest method of obtaining power. The notion held by many, that to burn wood is to waste it, is true only at certain times and places. Many times the mill waste's greatest value is as fuel and then not to burn it would be to waste it. Wood-working factories waste less than is popularly supposed. The owners give much thought to the matter of saving odds and ends. It is an exceptional case if a piece of wood is thrown away if it can be converted into anything that will sell. The vexing problem is to find uses for small pieces. The cost of working them into salable articles is frequently greater than the value of the finished commodities. To manufacture under such conditions is waste, not conservation. Many persons who see cartloads of odd-sized blocks and scraps from a wood-working factory on the way to the waste heap ask why the pieces are not made into matches, toothpicks, shoe pegs, clothespins and articles of that kind. In most cases the reason is that it is impossible to do it at a profit. Small commodities are generally made by expensive machines which cannot work small and irregular pieces of wood. It does little good to complain of wrong use unless a practicable remedy is pointed out.

Substitution, etc.—The general public scarcely appreciates the saving due to the substitution of cheap woods for those more expensive, and to the practice of making a smaller quantity answer where a larger quantity was formerly used. The latter point is well illustrated in the box business. A packing box large enough to hold four or five bushels was once made of inch boards. Much thinner lumber is now found sufficient; or such a box is made of built-up veneer in sheets not more than a quarter of an inch thick, reinforced at the corners. It requires less than half the material of the old inch-board box, and it is as serviceable. The saving is fifty per cent or more. The furniture factory saves in the same way. Solid oak or mahogany pieces of former times are seldom made now. A sheet of veneer, one-twentieth of an inch thick, takes the place of the two-inch plank of former times. If it is a table that is being made, the frame is constructed of cheap wood, and it is overlaid with veneer. The article is as handsome and as substantial as if made of solid expensive wood. Costly wood is saved and cheap wood is substituted for it. The saving brought about in this country by that process alone is so great that it can scarcely be estimated. If the old method had continued, the high-grade woods long ago would have become so costly that they would now be practically out of use. One of the most effective agents in the conservation of wood in this country has been the substitution of cheap and plentiful woods for the scarce and costly. It has saved in two ways: the expensive material has been made to last longer, go farther and remain cheap enough to be within the reach of the people; and the plentiful woods—formerly not used at all and therefore of no commercial value—have been made available, given a value, and changed from a useless encumbrance to a marketable product.

Substitution in the uses of wood has gone much farther than the building of frames or cores of cheap lumber and covering them with costly veneer. In many instances the veneer is of cheap wood, so prepared by the skill of the woodworker that it resembles costly wood, and is not only as handsome but for all practical purposes is as good. Take the one instance, Circassian walnut, as an example. This is a beautiful cabinet wood brought from the mountain fastnesses of Asiatic Turkey and southeastern Russia at so great an expense that even the wealthy seldom buy it in other form than veneer, and the ordinary purchaser foregoes the pleasure of owning furniture or finish of that wood. "Circassian walnut" furniture and finish are now in great demand in this country; yet most of what is seen is a product of the southern states—Missouri, Arkansas, Kentucky, Tennessee, Mississippi, Alabama and others. It is red gum, which, when carefully selected and cut into veneer, may be finished to resemble so closely Circassian walnut that few can tell the dif-

PERCENTAGE OF THE DIFFERENT KINDS OF WOOD USED BY EACH INDUSTRY.—TABLE 22.

Kinds of Wood—	Agricultural Implements	Boxes and crates	Boxes tobacco	Car construction	Caskets and coffins	Chairs	Excelsior	Fixtures	Furniture	Handles	Miscellaneous	Planing mill products	Refrigerators and kitchen cabinets	Sash, doors, blinds & genl millwork	Ship and boat building	Shuttles, spools, bobbins, etc	Sporting and Athletic goods	Vehicle & vehicle parts	Woodenware and Novelties
Basswood	....	....	....	....	....	....	....	....	....	....	....	100.00	....	....	....	....	....	....	....
Beech	....	....	....	....	....	62.50	....	....	....	....	....	6.25	....	31.25	....	....	....	....	....
Birch	....	....	....	....	....	53.33	....	26.67	....	....	....	5.33	....	14.67	....	....	....	....	....
Black gum	....	33.95	....	....	....	....	....	....	....	....	3.09	20.58	....	1.23	....	....	....	....	41.15
Black walnut	....	16.00	....	.80	....	....	....	80.00	....	....	....	....	....	3.20	....	....	....	....	....
Cherry	....	....	....	100.00	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Chestnut	....	....	....	....	72.16	....	....	10.31	....	....	....	17.53	....	....	....	....	....	....	....
Cottonwood	4.15	41.54	....	....	....	....	20.77	....	....	....	2.39	....	....	....	....	....	....	31.15	....
Cuban pine	....	41.38	....	17.24	....	....	....	....	....	....	....	41.38	....	....	....	....	....	....	....
Cypress	....	....	....	....	12.34	....	....	....	....	....	....	56.50	....	19.64	11.52	....	....	....	....
Dogwood	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	100.00	....	....	....
Evergreen magnolia	....	97.09	....	....	....	....	....	....	2.91	....	....	....	....	....	....	....	....	....	....
Green haw	....	....	....	....	....	....	....	....	100.00	....	....	....	....	....	....	....	....	....	....
Hackberry	....	....	....	....	....	....	....	....	100.00	....	....	....	....	....	....	....	....	....	....
Hickory	.38	....	....	....	....	3.98	....	....	....	14.49	.47	....	....	....	....	.95	21.79	57.94	....
Loblolly pine	....	....	....	15.79	....	....	17.54	....	....	....	....	66.67	....	....	....	....	....	....	....
Longleaf pine	.23	1.33	....	1.47	.05	....	1.05	.04	.13	....	*	85.76	.10	9.75	.04	....	....	.03	.02
Mahogany	....	....	....	87.39	....	....	....	6.30	....	....	....	....	....	6.31	....	....	....	....	....
Persimmon	....	....	....	....	....	....	....	....	7.67	....	....	....	....	....	....	92.02	.31	....	....
Pin oak	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	100.00	....
Post oak	....	....	....	....	....	....	....	....	11.63	....	....	....	....	....	....	....	....	88.37	....
Red cedar	....	....	76.92	....	23.08	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Red gum	.54	45.63	....	....	....	1.07	....	.27	.29	.08	.05	47.58	1.10	2.05	....	....	....	1.34	....
Red oak	....	....	....	24.40	....	33.65	....	....	2.81	....	....	12.70	.57	18.30	....	....	....	7.57	....
Shortleaf pine	.61	1.24	....	.67	.01	....	....	.01	....	.01	....	88.50	....	8.83	....	....	....	.12	....
Spruce pine	....	10.53	....	....	....	....	....	....	....	....	....	89.47	....	....	....	....	....	....	....
Sugar maple	....	....	....	....	....	....	....	....	....	....	....	28.57	....	71.43	....	....	....	....	....
Sweet magnolia	....	33.78	....	....	....	....	....	....	6.76	....	....	50.68	....	8.78	....	....	....	....	....
Sycamore	....	71.43	....	....	....	....	....	....	....	....	....	28.57	....	....	....	....	....	....	....
Texan oak	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	100.00	....
Tupelo	....	40.34	39.08	....	....	....	....	....	.63	....	....	6.30	.32	13.33	....	....	....	....	....
White ash	.43	1.07	....	41.32	....	8.63	....	....	....	39.26	....	1.35	....	1.07	....	....	....	6.87	....
White elm	....	10.53	....	....	....	....	....	....	1.75	....	....	....	....	....	....	....	....	87.72	....
White oak	.48	....	....	38.98	....	16.15	....	4.04	2.75	....	....	13.59	1.26	10.59	.81	....	....	11.35	....
White pine	13.57	....	....	....	18.10	....	....	....	....	....	1.36	63.35	....	3.62	....	....	....	....	....
Wild china	....	....	....	....	....	....	....	....	....	....	....	....	....	....	100.00	....	....	....	....
Willow oak	....	....	....	....	....	....	....	....	64.09	....	....	....	12.74	....	....	....	....	23.17	....
Yellow poplar	1.47	6.60	....	20.13	....	. .	....	.41	2.04	.12	.44	56.62	.40	9.16	....	....	....	2.61	....

TABLE 5.

CAR CONSTRUCTION.

Kinds of wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
Longleaf pine	7,094,000	38.10	$16.72	$118,586	7,022,000	72,000
White oak	4,826,300	25.92	20.94	101,072	4,826,300	......
Yellow poplar	2,471,000	13.27	20.97	51,805	2,411,000	60,000
Red oak	1,450,000	7.79	19.22	27,875	1,450,000	......
Shortleaf pine	1,100,000	5.91	16.82	18,500	1,100,000	......
White ash	963,000	5.18	23.29	22,425	910,000	53,000
Loblolly pine	450,000	2.42	17.67	7,950	450,000	......
Mahogany	138,600	.74	129.62	17,965	......	138,600
Cuban pine	125,000	.67	17.70	2,212	125,000	......
Cherry	500	*	100.00	50	......	500
Black walnut	500	*	100.00	50	......	500
Totals	18,618,900	100.00	$19.79	$368,490	18,294,300	324,600

*Less than 1/100 of 1 per cent.

TABLE 6.

VEHICLES AND VEHICLE PARTS.

Kinds of wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
Hickory	3,060,000	40.34	$22.53	$68,930	3,060,000	......
White oak	1,405,000	18.52	26.60	37,370	1,279,000	126,000
Post oak	760,000	10.02	20.00	15,200	754,000	6,000
White elm	500,000	6.59	15.00	7,500	500,000	......
Red oak	450,000	5.93	22.00	9,900	450,000	......
Yellow poplar	320,000	4.22	35.31	11,300	320,000	......
Red gum	250,000	3.30	25.00	6,250	250,000	......
Shortleaf pine	200,000	2.64	17.00	3,400	200,000	......
White ash	160,000	2.11	45.94	7,350	160,000	......
Cottonwood	150,000	1.98	35.00	5,250	150,000	......
Longleaf pine	149,900	1.98	16.34	2,450	149,900	......
Willow oak	60,200	.79	43.19	2,600	54,200	6,000
Pin oak	60,000	.79	40.00	2,400	......	60,000
Texan oak	59,900	.79	38.40	2,300	54,000	5,900
Totals	7,585,000	100.00	$24.02	$182,200	7,381,100	203,900

Excelsior.

The raw material for this industry is nearly all in the form of cordwood and longleaf pine constitutes nearly ninety per cent. of the total. There are only a few plants in the state; but their output is increasing and the manufacturers consider the prospects very good for further development. As furniture and other industries increase, the excelsior output will be augmented. The excelsior makers use cheaper material than any of the wood users of the state which employ wood as a raw material. There is comparatively little waste.

TABLE 7.

EXCELSIOR.

Kinds of wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
Longleaf pine	5,100,000	89.47	$8.00	$40,800	5,100,000	......
Loblolly pine	500,000	8.77	7.50	3,750	500,000	......
Cottonwood	100,000	1.76	9.00	900	100,000	......
Totals	5,700,000	100.00	$7.97	$45,450	5,700,000	......

Chairs.

The manufacturers of chairs are not usually makers of furniture in general, and for that reason chair making is often considered a separate industry. There are, of course, many kinds of chairs, and the processes and customs followed in manufacturing all are not the same; but in making stock for chairs standard sizes are more common than with other branches of furniture making. Some mills saw chair stock exclusively, such as backs, bottoms, legs, and other parts. These parts are then shipped to the chair factory to be finished and the chairs completed. Oak, consisting principally of white and red, are reported in Alabama more largely than all other woods together—in fact, they amount to four times as much as all the others. It is probable that much of the wood reported as red oak is really yellow, Texan, and willow oak, since it all is state-grown, and the true red oak is very scarce in Alabama.

TABLE 8.

CHAIRS.

Kinds of wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
White oak	2,000,000	39.91	$14.99	$30,000	2,000,000	......
Red oak	1,999,800	39.91	15.00	30,000	1,999,800	......
Hickory	210,000	4.19	11.67	2,450	200,000	10,000
White ash	201,000	4.01	10.05	2,020	201,000	......
Red gum	200,300	4.00	10.00	2,000	200,300	......
Beech	200,000	3.99	10.00	2,000	200,000	......
Birch	199,900	3.99	10.01	2,000	......	199,900
Totals	5,011,000	100.00	$14.06	$70,470	4,801,100	209,900

Boxes, Tobacco.

The material shown in Table 9 was used in the manufacture of cigar boxes. In most parts of this country the makers of such boxes draw largely from Spanish cedar brought from Cuba and other countries south of us, but in Alabama no Spanish cedar was reported. The red cedar in the table is the same as that used in making lead pencils, cedar chests, etc. Tupelo, the principal wood used, may be stained to imitate cedar, but the odor which is a valuable property of the cedar is not easily imitated when other woods are used. Tupelo, being a white wood, shows stenciling well.

Agricultural Implements.

A large amount of cotton ginning machinery is manufactured in Alabama, but other agricultural implements are made in a small way only. Considerable wood is used, however, in shops in all parts of the state where farm machinery is repaired. Blacksmith and wheelwright shops do most of the work of that kind. In the manufacture of ginning machinery, certain woods are preferred for specific purposes. White pine at $40 a thousand is used for brushes; red gum and cottonwood are made into brush heads; yellow poplar is for pressers and feeders; white ash, white oak, and shortleaf pine for pressers; and longleaf pine for frames and other parts.

The hickory which appears in Table 10 was demanded by shops which make repairs, but turn out little or no new machinery. Shortleaf pine and white oak also are used in repair work. The abundance of coal and iron in Northern Alabama, and the supply of suitable woods in many parts of the state would suggest that Alabama might profitably manufacture much of the farm machinery annually demanded in the state; but it does not appear that a serious beginning in that direction has yet been made.

Furniture.

Less than 2,000,000 feet of wood is made into furniture in Alabama yearly. That is a small amount for a state so rich in timber. There are single towns in Illinois, Michigan and Wisconsin that use more. Two million feet lacks much of being sufficient to supply Alabama's home market with plain furniture. The column in Table 11 which shows the average cost of the furniture woods used in the state is worthy of more than passing notice because the prices are remarkably low, not of one or two woods only, but of every one of the fourteen in the table. It is worthy of note, also, that ten of the fourteen woods and eighty per cent of the total quantity reported were cut in Alabama. The conclusion is logical that if furniture wood can be had in Alabama at an average cost at the factory of only $13.90 per 1,000 feet, it ought to be possible to build up a large business in manufacturing furniture in that state. The prices paid for material by furniture makers in some of the other states, where furniture is manufactured in large amounts, show that Alabama offers decided advantages in the matter of cost of material. It ought to offer inducements in the matter of cheap and abundant power equal to those of any other state or region. Following are average prices paid for rough lumber by furniture manufacturers in some of the states:

North Carolina	$18.23
Wisconsin	27.17
Massachusetts	28.36
Maryland	29.32
Kentucky	30.73
Illinois	34.49

A comparatively large amount of the raw material shown in Table 11 was bought in log form, which accounts in part for the low cost; but if the sawmill charges are added the cost is still below that in any of the states above listed. It would appear, therefore, that Table 11 suggests opportunities for the development of large business in furniture making in Alabama—cheap material to which should be added cheap power.

The woods listed in the table are all substantial. Four are oaks, all suitable for outside, visible parts of good furniture; longleaf pine is serviceable for all interiors of furniture and for cheaper kinds of outside work. Red gum, if skilfully worked, is one of the best furniture woods in the United States, and a great future is promised for it. Some of the species listed in the table belong in the class of cabinet woods, provided their beauties are brought out by skilled workmen and modern methods. Persimmon (the heartwood), and the two magnolias, particularly sweet magnolia, deserve places as such.

Handles.

White ash is the leading handle wood in Alabama, followed closely by hickory. The latter goes largely into ax, hammer, and pick handles; the former into handles for farm tools, such as hoes, shovels, rakes, and pitchforks. Yellow poplar, shortleaf pine, and red gum are reported as hoe-handle material, but the small quantity of each used seems to indicate that these woods are not entirely satisfactory for such handles. The cheapness of all the woods reported in this industry is due to purchases in the log form. No cause is shown why yellow poplar is the cheapest of the list, as it usually is an expensive wood.

Sporting and Athletic Goods.

The raw material for this industry is generally received at the factory in the form of bolts. Nearly all of the manufacturing output is semi-finished stock for golf sticks. The hickory goes principally into shafts, while the persimmon is generally turned into rough blocks for golf-stick heads. Only two or three individuals attempt to turn out a finished product and they only aim to supply local golf clubs. The hickory and persimmon stock is in great demand both at home and abroad and a large amount is shipped out of the state.

Shuttles, Spools and Bobbins.

The raw material for shuttles, spools, and bobbins is received at the factories in the form of bolts, and is often bought and sold by the cord. Dogwood and persimmon are manufactured into rough shuttle

TABLE 2.

PLANING MILL PRODUCTS.

Kinds of Wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
Longleaf pine	415,176,000	71.01	$11.77	$4,885,353	386,919,000	28,257,000
Shortleaf pine	146,164,500	25.00	11.42	1,669,509	145,164,500	1,000,000
Red gum	8,882,000	1.52	10.87	96,571	8,832,000	50,000
Yellow poplar	6,950,000	1.19	12.83	89,168	6,850,000	100,000
Loblolly pine	1,900,000	.32	11.63	22,100	1,900,000	......
White oak	1,683,000	.29	17.79	29,933	1,516,000	167,000
Cypress	1,030,000	.18	15.09	15,540	1,015,000	15,000
Spruce pine	850,000	.15	15.26	12,975	550,000	300,000
Red oak	755,000	.13	16,08	12,140	588,000	167,000
Tupelo	500,000	.09	10.00	5,000	500,000	......
Cuban pine	300,000	.05	10.83	3,250	300,000	......
White pine	140,000	.02	45.00	6,300	......	140,000
Black gum	100,000	.02	12.00	1,200	100,000	......
Chestnut	85,000	.01	11.06	940	65,000	20,000
Sweet magnolia	74,900	.01	11.52	863	74,900	......
White ash	31,500	*	12.38	390	1,500	30,000
Birch	20,300	*	34.48	700	......	20,300
Beech	20,000	*	13.25	265	10,000	10,000
Basswood	10,000	*	10.00	100	......	10,000
Sugar maple	9,800	*	24.49	240	......	9,800
Sycamore	2,000	*	10.00	20	2,000	......
Totals	584,684,000	100.00	$11.72	$6,852,557	554,387,900	30,296,100

*Less than 1/100 of 1 per cent.

Sash, Doors, Blinds and General Millwork.

Many commodities other than those named in the caption of the table are the products of this industry, though sash, doors, blinds and interior and exterior finish are the principal ones. The lathe plays an important part in this industry, and its output consists of spindles for grills, balusters for stairs and porches, and larger pieces such a columns, and newel posts. Brackets, pedestals and capitals are also among the usual products. As in Table 2, longleaf and shortleaf pine surpass in quantity all the other woods and together constitute over ninety-one per cent. of the total.

The average cost is low for an industry which turns out many products of high class, but the general average is affected by the cheapness of the two largest items, longleaf and shortleaf pine. Sweet magnolia and black gum are the cheapest shown in Table 3. The first of these, when well selected and properly finished, is a very handsome wood, though it is little known. The rich brown of its heartwood will compare favorably with black walnut.

The yellow poplar's cost is so low as to suggest that most of the purchases were in log form, and even then its cheapness is not wholly accounted for. This wood and white pine usually range very nearly the same in price under similar circumstances; but here the pine's is more than four times the cost of the poplar. The latter was bought in small quantities, and the former in larger amounts.

TABLE 3.

SASH, DOORS, BLINDS, AND GENERAL MILLWORK.

Kinds of Wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
Longleaf pine	47,195,000	70.08	$12.94	$ 610,713	46,100,000	1,095,000
Shortleaf pine	14,589,200	21.66	12.33	179,898	13,989,000	600,200
White oak	1,310,500	1.95	21.01	27,529	1,268,000	42,500
Yellow poplar	1,125,000	1.67	15.37	17,296	990,000	135,000
Red oak	1,087,500	1.61	16.34	17,775	1,080,000	7,500
Tupelo	1,057,000	1.57	11.48	12,134	847,000	210,000
Red gum	381,800	.57	12.62	4,820	381,800	......
Cypress	358,000	.53	15.20	5,440	358,000	......
Beech	100,000	.15	10.50	1,050	100,000	......
Birch	54,800	.08	48.17	2,640	......	54,800
Sugar maple	25,200	.04	14.88	375	25,200	......
White ash	25,000	.04	15.00	375	25,000	......
Sweet magnolia	13,000	.02	10.00	130	13,000	......
Mahogany	10,000	.01	160.00	1,600	......	10,000
White pine	8,000	.01	65.00	520	......	8,000
Black gum	6,000	*	10.00	60	6,000	......
Black walnut	2,000	*	30.00	60	......	2,000
Totals	67,348,000	100.00	$13.10	$882,415	65,183,000	2,165,000

*Less than 1/100 of 1 per cent.

Packing Boxes and Crates.

The boxes made in Alabama, and shown statistically in Table 4, are used chiefly for marketing the products of the orchard and truck garden, though egg cases were made in large numbers. The principal articles manufactured were hampers, grape baskets, berry boxes, cabbage crates, fancy boxes, and crates in which to ship smilax, holly, and moss. Fifty thousand feet of the cottonwood listed in the table was of the species known as swamp cottonwood. It is a wood less plentiful than the common cottonwood and is also in less demand which accounts for its low price. Black walnut at $18 is cheap, even for logs, but the box makers probably made use of logs so small and containing so large a percentage of white sapwood that few other industries would buy them. The average cost of lumber as shown in Table 4, runs regularly not much above or below the average of $10.89, the extreme range being from $9 to $18 for the fifteen species.

TABLE 4.

BOXES AND CRATES PACKING.

Kinds of wood—	Quantity used annually. Feet B. M.	%	Av. cost per 1000 ft.	Total cost f. o. b. factory.	Grown in Ala., ft. B. M.	Grown out of Ala., ft. B. M.
Red gum	8,517,000	37.95	$11.80	$100,525	7,585,000	932,000
Longleaf pine	6,450,000	28.74	10.00	64,500	6,450,000	......
Tupelo	3,200,000	14.26	10.94	35,000	3,200,000	......
Shortleaf pine	2,050,000	9.13	10.05	20,600	2,050,000	......
Yellow poplar	810,000	3.61	12.16	9,850	810,000	......
Evergreen magnolia	500,000	2.23	10.00	5,000	500,000	......
Cuban pine	300,000	1.34	9.00	2,700	300,000	......
Cottonwood	200,000	.89	9.25	1,850	200,000	......
Black gum	165,000	.74	9.00	1,485	165,000	......
Spruce pine	100,000	.45	10.00	1,000	100,000	......
White elm	60,000	.27	14.00	840	60,000	......
Sweet magnolia	50,000	.22	10.00	500	50,000	......
White ash	25,000	.11	14.00	350	25,000	......
Black walnut	10,000	.04	18.00	180	10,000	......
Sycamore	5,000	.02	10.00	50	5,000	......
Totals	22,442,000	100.00	$10.89	$244,430	21,510,000	932,000

Car Construction.

Several railroads have repair shops in the vicinity of Birmingham and much of the wood shown in Table 5 is employed in car repair, and much is used for street-car building. In car construction, a large part of the lumber employed is in the rough form, that is, it has not been run through planers and other machines; but some of the material is carefully dressed and finished by skilled workmen. Eleven woods are employed in this industry, but two of them—black walnut and cherry—are in quite small amounts and are used as finish for passenger coaches. A large part of the white ash reported is for street-car finish and some of it for finish of passenger cars. Longleaf and shortleaf pine meet demand in many parts of car construction; sills, siding, decking, braces, and the like. White and red oak are employed for sills and other rough work where strength is required, and they also give good service as coach finish. Yellow poplar is an all-round car wood, but the best of it goes into finish, particularly into broad panels for passenger coaches. It may be successfully stained to imitate other woods. The excellent finish which it is capable of taking gives it a place which few other woods can fill, and for many years it has been considered one of the best woods for certain parts of car construction. Mahogany was the most expensive wood used, and it was made into finish for coaches.

Vehicles and Vehicle Parts.

Hickory is the most important wood in the vehicle manufacturing business in Alabama, as it is in all other parts of the United States. Half a dozen species of hickory are employed, but one name applies to all without distinction. A hickory log consists of thick, white sapwood and dark colored heart wood. Common opinion has long held that the sapwood is superior to the heartwood for vehicle construction. Tests made by the United States Forest Service a few years ago, however, demonstrated that the difference in quality between hickory heartwood and sapwood is less than had been generally supposed, and that, for certain purposes, the heartwood is as satisfactory as the sap. The wooden parts of small vehicles are often entirely of hickory, with the exception of the body or box; but such is less often the case with heavy wagons. For shafts, poles, spokes, rims, axles, double trees and single trees ,hickory has no superior in the manufacture of buggies and carriages. Large wagons and carts substitute oak for some of these parts, and several oaks are suitable. The Alabama manufacturers reported white oak, red oak, Texan oak, post oak, pin oak and willow oak. The bodies of carriages and buggies and the beds of farm and business wagons are made of woods which are reasonably light, will take paint readily, will not split easily or warp badly in changes of temperature and weather, and which are not excessive in cost. Those most generally used in Alabama are yellow poplar, red gum, shortleaf and longleaf pine, and cottonwood. White ash, which is the most expensive wood reported in this industry, is made into bolsters, poles, sills, frames, and felloes. It is a strong, stiff wood. A large part of the total of more than 7,500,000 feet of vehicle wood reported in Alabama is used for repairs in small shops in all parts of the state. Some vehicles are made in shops of that kind. The larger establishments usually make semi-finished, rough-turned vehicle stock, and pass it on (generally sending it out of the state) to be finished and made into vehicles.

The discussion under Table 1 of cost of woods when bought in small amounts or for special purposes will apply to some of the woods of Table 6. Three oaks, at the bottom of the table, cost more per thousand than the average would have shown, had they been purchased in larger amounts. White ash at $45.94 is the costliest wood reported in the vehicle industry. It is not usual for ash to be the most expensive wood in the vehicle industry, and in order to make comparisons between its cost in Alabama and in certain other states where similar studies have been made, the following average costs are given:

North Carolina	$27.88
Illinois	36.23
Kentucky	37.00
Massachusetts	42.00
Alabama	45.94
Wisconsin	47.66
Maryland	51.00

This comparison conveys the impression that there is no regular price for ash. Maryland vehicle makers pay nearly twice as much as those of North Carolina, while Alabama and Wisconsin pay nearly the same. Nevertheless, there is usually a reason back of every price, but it is not always easy to find, It is pretty sure to depend on grades and dimensions a good deal more than on distances of transportation. For instance the Illinois makers of heavy wagons paid $36.23 for their ash and the light wagon makers paid $51.85.

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AVERAGE COST OF THE DIFFERENT KINDS OF WOOD USED BY EACH INDUSTRY.—TABLE 23.

Kinds of Wood—	Agricultural Implements	Boxes and crates	Boxes tobacco	Car construction	Caskets and coffins	Chairs	Excelsior	Fixtures	Furniture	Handles	Miscellaneous	Planing mill products	Refrigerators and kitchen cabinets	Sash, doors, blinds & genl millwork	Ship and boat building	Shuttles, spools, bobbins, etc	Sporting and Athletic goods	Vehicle & vehicle parts	Woodenware and Novelties
Basswood	$	$	$	$	$	$	$	$	$	$	$	$10.00	$	$	$	$	$	$	$ ....
Beech	....	....	....	....	....	10.00	....	....	....	....	....	13.25	....	10.50	....	....	....	....	....
Birch	....	....	....	....	....	10.01	....	50.00	....	....	....	34.48	....	48.17	....	....	....	....	....
Black gum	....	9.00	....	....	....	....	....	....	....	....	25.00	12.00	....	10.00	....	....	....	....	10.00
Black walnut	....	18.00	....	100.00	....	....	....	40.00	....	....	....	....	....	30.00	....	....	....	....	....
Cherry	....	....	....	100.00	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Chestnut	....	....	....	....	16.01	....	....	19.92	....	....	....	11.06	....	....	....	....	....	....	....
Cottonwood	31.00	9.25	....	....	....	....	9.00	....	....	....	42.43	....	....	....	....	....	....	35.00	....
Cuban pine	....	9.00	....	17.70	....	....	....	....	....	....	....	10.83	....	....	....	....	....	....	....
Cypress	....	....	....	....	14.44	....	....	....	....	....	....	15.09	....	15.20	15.24	....	....	....	....
Dogwood	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	14.20	....	....	....
Evergreen magnolia	....	10.00	....	....	....	....	....	....	15.00	....	....	....	....	....	....	....	....	....	....
Green haw	....	....	....	....	....	....	....	....	15.15	....	....	....	....	....	....	....	....	....	....
Hackberry	....	....	....	....	....	....	....	....	15.00	....	....	....	....	....	....	....	....	....	....
Hickory	40.00	....	....	....	....	11.67	....	....	....	13.86	20.00	....	....	....	....	20.00	23.26	22.53	....
Loblolly pine	....	....	....	17.67	....	....	7.50	....	....	....	....	11.63	....	....	....	....	....	....	....
Longleaf pine	20.00	10.00	....	16.72	13.14	....	8.00	22.50	12.22	....	20.20	11.77	13.00	12.94	15.00	....	....	16.34	14.19
Mahogany	....	....	....	129.62	....	....	....	125.00	....	....	....	....	....	160.00	....	....	....	....	....
Persimmon	....	....	....	....	....	....	....	....	15.00	....	....	....	....	....	....	15.00	25.00	....	....
Pin oak	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	40.00	....
Post oak	....	....	....	....	....	....	....	....	12.00	....	....	....	....	....	....	....	....	20.00	....
Red Cedar	....	....	20.00	36.00	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Red gum	22.10	11.80	....	....	....	10.00	....	20.00	11.36	10.20	24.75	10.87	12.62	12.62	....	....	....	25.00	....
Red oak	....	....	....	19.22	....	15.00	....	....	13.98	....	....	16.08	14.00	16.34	....	....	....	22.00	....
Shortleaf pine	16.90	10.05	....	16.82	15.00	....	....	18.06	....	10.00	....	11.42	....	12.33	....	....	....	17.00	....
Spruce pine	....	10.00	....	....	....	....	....	....	....	....	....	15.26	....	....	....	....	....	....	....
Sugar maple	....	....	....	....	....	....	....	....	....	....	....	24.49	....	14.88	....	....	....	....	....
Sweet magnolia	....	10.00	....	....	....	....	....	....	14.85	....	....	11.52	....	10.00	....	....	....	....	....
Sycamore	....	10.00	....	....	....	....	....	....	....	....	....	10.00	....	....	....	....	....	....	....
Texan oak	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	38.40	....
Tupelo	....	10.94	9.10	....	....	....	....	....	11.00	....	....	10.00	11.00	11.48	....	....	....	....	....
White ash	35.00	14.00	....	23.29	....	10.05	....	....	....	17.87	....	12.38	....	15.00	....	....	....	45.94	....
White elm	....	14.00	....	....	....	....	....	....	15.00	....	....	....	....	....	....	....	....	15.00	....
White oak	35.00	....	....	20.94	....	14.99	....	25.00	15.96	....	....	17.79	14.38	21.01	15.00	....	....	26.60	....
White pine	40.00	....	....	....	20.00	....	....	....	....	....	100.00	45.00	....	65.00	....	....	....	....	....
Wild china	....	....	....	....	....	....	....	....	....	....	....	....	....	....	15.00	....	....	....	....
Willow oak	....	....	....	....	....	....	....	....	14.02	....	....	....	14.00	....	....	....	....	43.19	....
Yellow poplar	25.00	12.16	....	20.97	....	....	....	25.15	16.51	9.80	17.66	12.83	20.00	15.37	....	....	....	35.31	....
Average cost	$20.11	$10.89	$ 9.44	$19.79	$15.69	$14.06	$ 7.97	$28.11	$13.90	$15.88	$23.89	$11.72	$13.50	$13.10	$15.10	$14.68	$23.26	$24.02	$11.44

ference. It may also be finished to resemble oak. cherry, birch, maple and black walnut; and it is as durable and as handsome. The use of the substitute, which is plentiful and cheap, saves the small supply of woods scarce and costly. No one who is able and willing to buy the genuine is prevented from doing so; yet, if substitutes did not conserve the supply, the scarce woods would soon disappear, and no one could buy them. Substitution is in this case, therefore, a measure of conservation, for it puts plentiful woods into use and prolongs the small supply of costly woods; and it also brings fine articles within reach of the many and saves money for both the manufacturer and the buyer. In most cases the chief difference between a plain plentiful wood and a figured costly and scarce one, is beauty. In the costly wood, nature did the figuring, but man has learned the art of staining, shading, and graining some of the plain woods until he has equaled the best that nature has done in that line, and this has led to a wider use for some of the woods which we have in abundance, and is contributing much to the solution of one of our most vexatious waste problems. It never has been difficult to curtail the waste of costly woods, for men will save when there is money in it; but the hard problem has been and is to save the cheap and plentiful. If buyers cannot be found for them in their natural condition, it is economy to change and beautify them by science and art until they can enter the markets which formerly belonged exclusively to costly cabinet woods. Create a demand for a wood and its waste problem will disappear.

Forest Conditions.

The plow generally follows the lumberman in Alabama; that is, when the merchantable timber has been removed from a tract the land is cleared for agricultural purposes. This rule has many exceptions, however, and more in the hardwood region than where pine is the prevailing timber. When land is cleared for farms, it is out of consideration as a future source of lumber supply. In past time much farm land was exhausted by tillage, was abandoned, and some sort of forest growth took possession. That is not likely to occur in the future. Farmers are learning better than to wear their land out and abandon it. The timber of the future will come from lands not suitable for agriculture, rough tracts, swamps and poor soil. Land of that kind will grow timber nearly as well as any other. It may be expected that the owners of such land will see to it that the best-paying kinds of timber will have preference over poor kinds. Fast-growing, well-shaped species will be encouraged, and small, ragged kinds will not be. By following that method the yield per acre will be much increased. Up to the present time little attention has been given to matters of forestry in Alabama. The old stands have been cut, and if young trees can gain a foothold they have been permitted to do so; but not much has been done to assist the best species. A gradual change in this matter may be expected. One of the first and most needed steps will consist in better fire control so that vigorous seedlings will not be destroyed, and scrub growth enabled to take their place. All kinds of pine in Alabama grow from seeds only, not from sprouts; and if seedlings are destroyed and large trees have been removed, there can be no renewal of the pine forest and hardwoods —too often of a poor quality—will gradually take possession of the ground.

The establishment of woodlots has not yet taken much hold in Alabama. The woodlot is a piece of ground set apart on the farm for growing trees. Sometimes the trees are planted, but usually a natural stand is protected and allowed to grow. Such lots are an important source of lumber supply in some of the older states where the forests have been largely cut. It may be expected that Alabama farmers will soon give their attention to this matter and will see that the rough corners of their farms are set to work growing timber. Each must decide for himself what kinds will do best on his lands. In most cases loblolly pine will do well. It grows rapidly, and thrives in dense stands. Several of the oaks will pay. The willow oak is probably the fastest grower on land that suits it. Cottonwood increases in size rapidly and makes good lumber. On thin, rocky land, red cedar is probably the best tree to grow for fence posts; but on fertile land catalpa, osage orange (called mock orange) and locust might pay better.

DIRECTORY.

Below is a list of Alabama wood-using manufacturers who supplied the data contained in this report. Those manufacturing several products classified under different industries will appear in the list, with their addresses, under more than one industry.

Agricultural Implements.

Continental Gin Company, Birmingham.
W. T. Sisson, Tallahassee.

Boxes and Crates, Packing.

Randolph Lumber Company, Birmingham.
Keego Veneer Company, Brewton.
Martin Veneer Company, Brewton.
Bridgeport Woodenware Manufacturing Company, Bridgeport.
N. B. Hall & Sons, Decatur.
Jervis Lumber Company, Decatur.
Beavens-Jackson Lumber & Veneer Company, Evergreen.
Huntsville Fiber & Veneer Works, Huntsville.
Jerome H. Sheip, Mobile.
D. M. Wheeler, Mobile.
Southern Sash & Door Company, Montgomery.
J. H. Hibble & Son, Piedmont.
Sylacauga Planing & Lumber Company, Sylacauga
Southern Climax Basket Company, Troy.
Troy Veneer & Crate Company, Troy.

Boxes, Tobacco.

Martin Veneer Company, Brewton.
Jerome H. Sheip, Mobile.
Jerome H. Sheip, Montgomery.

Car Construction.

Alabama Great Southern Railway, Birmingham.
Birmingham Railway, Light & Power Company, Birmingham.
Louisville & Nashville Railway, Birmingham.
Southern Railway, Birmingham.
T. H. Blake, Cortelyou.
W. R. Flowers Lumber Company, Dothan.
Twin Tree Lumber Company, Maplesville.
Western Railway of Alabama, Montgomery.
Lindsey Lumber Company, Pollard.

Caskets and Coffins.

Alabama Coffin & Casket Company, Birmingham.
Mobile Casket Company, Mobile.
Montgomery Coffin Company, Montgomery.

Chairs.

Block Spring Bed Company, Mobile.
Corinth Chair Company, Mobile.
I. B. Crowe & Sons, Wadley.

Dressed Stock.

Youngblood & Co., Adville.
James Moore, Aldrich.
Empire Lumber Company, Andalusia.

Allison Lumber Company, Bellamy.
Birmingham Railway, Light & Power Company, Birmingham.
Kaul Lumber Company, Birmingham.
Lathrop Lumber Company, Birmingham.
Bridgeport Woodenware Manufacturing Company, Bridgeport.
J. A. McKinney, Centerville.
Alexander & Simmons, China.
A. A. Jones, Columbia.
C. Arnold & Son, Cullman.
J. A. Blackwell, Deatsville.
A. D. Mills, Deatsville.
Enterprise Lumber Company, Dothan.
W. B. Perdue, Elba.
Florida & Alabama Land Company, Falco.
Himrod-McKay Lumber Company, Flatwood.
Coosa Lumber Company, Gadsden.
Tatom-Bonham Lumber Company, Geneva.
Star Lumber Company, Gordo.
Black Warrior Lumber Company, Knoxwood.
Jackson Lumber Company, Lockhart.
Melrose Lumber Company, McShan.
Manchester Lumber Company, Manchester.
Durden Lumber Company, Maplesville.
The Robinson Land & Lumber Company, Mobile.
Elrod Lumber Company, Montgomery.
W. B. Coats, Myrtlewood.
Geo. M. Crump, Ohatchie.
Bay Point Lumber Company, Pinewood.
Lindsey Lumber Company, Pollard.
Henderson-Boyd Lumber Company, Richburg.
Simpson & Harper, Samson.
Jackson-Tinney Company, Talladega.
Roland G. Spearman & Co., Talladega.
Geo. Edgeworth & Sons, Vernon.
Vida Lumber Company, Vida.
Vinegar Bend Lumber Company, Vinegar Bend.

Excelsior.

Mobile Excelsior Works, Mobile.
D. M. Wheeler, Mobile.
J. F. George & M. C. Thomas, Webb.

Fixtures.

Hill & Horton, Mobile.
Cramton Lumber Company, Montgomery.
Montgomery Show Case Company, Montgomery.

Furniture.

Evans Bros., Birmingham.
The Southern Manufacturing Company, Birmingham.
Keego Veneer Company, Brewton.
Austin & Gentry Lumber Company, Coffee Springs
The Dreher Manufacturing Company, Cullman.
W. R. Flowers Lumber Company, Dothan.
Straiton Bros., Greensboro.
Block Spring Bed Co., Mobile.
Hill & Horton, Mobile.
Opelika Lumber Company, Opelika.
Jackson-Tinney Company, Talladega.
W. E. Hanchey, Troy.
I. B. Crowe & Sons, Wadley.

Handles.

William Geisen Handle Mfrs., Cullman.
Alabama Hardwood Company, Montgomery.
E. S. Wittel & Son, Shortleaf.
S. J. Caldwell, Jr., Union Springs.

Miscellaneous.

Birmingham Railway, Light & Power Company, Birmingham.
Birmingham Trunk Factory, Birmingham.
Keego Veneer Company, Brewton.
Evergreen Decorating Company, Evergreen.
Huntsville Fiber & Veneer Works, Huntsville.
Gilbert Trunk Company, Montgomery.
W. H. Cox, Stanton.

Planing-Mill Products.

James Moore, Aldrich.
John Moore, Aldrich.
Herzfeld Lumber Company, Alexander City .
Andalusia Manufacturing Company, Andalusia.
Empire Lumber Company, Andalusia.
A. Dishmon, Anniston.
L. N. & E. T. Downing, Anniston.
Houser Lumber Company, Anniston.
W. L. Little, Anniston.
H. C. Lynch, Anniston.
R. A. Berry, Arab.
The Athens Planing Mill Company, Athens.
Miller Ice & Lumber Company, Athens.
W. M. Carney Mill Company, Atmore.
J. A. Cullors, Auburn.
Whitewater Lumber Company, Autaugaville.
A. P. Wiggins, Babbie.
Central Lumber Company, Bessemer.
Acme Coal & Lumber Company, Birmingham.
Evans Bros., Birmingham.
Jenkins Lumber Company, Birmingham.
T. H. Johnston & Co., Birmingham.
Kaul Lumber Company, Birmingham.
Lathrop Lumber Compny, Birminghm.
Peerless Lumber & Manufacturing Company, Birmingham.
Randolph Lumber Company, Birmingham.
Bentley Lumber Company, Brantley.
Cedar Creek Mill Company, Brewton.
Lovelace Lumber Company, Brewton.
J. A. McKinney, Centerville.
W. T. Smith Lumber Company, Chapman.
Alexander & Simmons, China.
R. S. McWilliams, Clairmount Springs.
J. W. Stanfield Lumber Company, Clanton.
Smith & Herlong, Clayton.
Austin & Gentry Lumber Company, Coffee Springs
Kelly Planing Mill, Coffee Springs.
A. A. Jones, Columbia.
T. H. Blake, Cortelyou.
A. D. Mills, Deatsville.
Jervis Lumber Company, Decatur.
W. R. Flowers Lumber Company, Dothan.
A. D. Donaldson, Elba.
W. B. Perdue, Elba.
W. P. Windham, Elba.
Neal & Beatty, Elmore.
Arnold Lumber Compny, Ensley.
Ensley Woodworking Compny, Ensley.
W. W. A. Lumber Compny, Ethridge.
Eufaula Lumber Company, Eufaula.
F. M. Deer, Evergreen.
Florida & Alabama Land Company, Falco.
H. H. Hitt Lumber Company, Falkville.
Himrod-McKay Lumber Company, Flatwood.
Acme Lumber & Manufacturing Company, Florence.
Richardson Lumber Company, Florence.
The Alger-Sullivan Lumber Company, Foshee.
Independent Lumber Company, Fremont.
The Scotch Lumber Company, Fulton.
D. B. Gantt & Bro., Gantt.
Garden City Hickory Company, Garden City.
Tatom Bonham Lumber Company, Geneva.
N. M. Rhodes Mill & Mercantile Company, Georgiana.
J. R. Carr, Gordo.
G. B. Howard, Goshen.
Willcox Mill Company, Greggville.
Henry Kraeke, Guntersville.
Lammon & Sons, Hartford.
C. D. Martin, Jacksonville.
Bell & Hollman, Kennedy.
Black Warrior Lumber Company, Knoxwood.
Frost-Sibley Lumber Company, Lamison.
Klondyke Lumber Company, Livingston.
Jackson Lumber Company, Lockhart.
Halladay Lumber Company, McShan.
Melrose Lumber Company, McShan.
Blacksher Company, Magazine.
Smith-McGowin Mill Company, Magazine.
Manchester Lumber Company, Manchester.
Twin Tree Lumber Company, Maplesville.
The Marbury Lumber Company, Marbury.
L. G. Cameron, Mobile.
Crichton Lumber Company, Mobile.
Dauphin Lumber Company, Mobile.
Dixie Lumber Company, Mobile.
The Robinson Land & Lumber Company, Mobile.
Verona Lumber Company, Mobile.
Cramton Lumber Company, Montgomery.
Elrod Lumber Company, Montgomery.
Enterprise Planing Mill Company, Montgomery.
Highland Park Lumber Company, Montgomery.
Mutual Lumber Company, Montgomery.
Hall-Leftwich Lumber Company, Morriston.
L. A. Stewart & Son, Moulton.
W. B. Coats, Myrtlewood.
Dickard Mill Company, New Brocton.
E. C. Payne Lumber Company, New Decatur.
C. P. Ward, Odenville.
Geo. M. Crump, Ohatchie.
Griffin Bros., Ohatchie.
Opelika Lumber Company, Opelika.
Paint Rock Planing Mill, Paint Rock.
Backey Creek Lumber Company, Pansey.
J. H. Hibble & Son, Piedmont.
Vredenburgh Saw Mill Company, Pine Hill.
Bay Point Lumber Company, Pinewood.
T. M. Holley, Pink.
Miller-Brent Lumber Company, Poley.
Lindsey Lumber Company, Pollard.
The King Lumber Company, Prentice.
S. M. Long, Range.
N. J. Barton, Red Bay.
Geo. Binick, Red Bay.
L. F. Gober, Red Bay.
Manchester Lumber Company, Red Bay.
H. M. Pugh, Red Bay.
Henderson-Boyd Lumber Company, Richburg.
E. E. Jackson Lumber Company, Riderville.
Horseshoe Lumber Company, River Falls.
Lathrop-Hatten Lumber Company, Riverside.
Frank Andrews, Samson.
Ewing Pine Lumber Company, Samson.
McGowin & Robbins Lumber Company, Samson.
Simpson & Harper, Samson.
Henderson Lumber Company, Sanford.
Scottsboro Planing Mill, Scottsboro.
Batterson & Plumley, Selma.
E. M. Byrne, Selma.
W. C. Dyer, Stanton.
Hauser & Wheeler, Stevenson.
Laubenthal Lumber Company, Sunflower.
Robert Edwards, Sylacauga.
R. L. Rumsey, Sylacauga.
Sylacauga Planing & Lumber Company, Sylacauga
Jackson-Tinney Company, Talladega.
Roland G. Spearman & Co., Talladega.
J. V. Wallis & Co., Talladega.
D. W. Boatright, Tallassee.
Thomaston Lumber Company, Thomaston.
Thomasville Manufacturing, Electric Light & Power Company, Thomasville.
Cochran Lumber Company, Toinette.
W. E. Hanchey, Troy.
Strickland Bros. Machine Company, Tuscaloosa.
Tuscaloosa Lumber Company, Tuscaloosa.
Turner & Baker, Vernon.
Vida Lumber Company, Vida.
Vinegar Bend Lumber Company, Vinegar Bend.
I. B. Crowe & Sons, Wadley.
McClure Lumber Company, Wagar.
Tinney Lumber Company, Waldo.
I. P. O. Wharton, Wilsonville.
Geo. N. & J. M. McDonald, Winfield.
E. W. Gates Lumber Company, Yellow Pine.

Refrigerators and Kitchen Cabinets.

The Southern Manufacturing Company, Birmingham.
The Dreher Manufacturing Company, Cullman.
Straiton Bros., Greensboro.

Sash, Doors, Blinds and General Millwork.

Lindsey & Shiflet, Adamsville
Herzfeld Lumber Company, Alexander City.
Houser Lumber Company, Anniston.
The Athens Planing Mill Company, Athens.
Attalla Lumber Company, Attalla.
J. A. Cullors, Auburn.
Whitewater Lumber Company, Autauguaville.
Evans Bros., Birmingham.
Jenkins Lumber Company, Birmingham.
Kingston Planing Mill Company, Birmingham.
Peerless Lumber & Manufacturing Company, Birmingham.
Randolph Lumber Company, Birmingham.
Cedar Creek Mill Company, Brewton.
Austin & Gentry Lumber Company, Coffee Springs
Cullman Lumber Company, Cullman.
Jervis Lumber Company, Decatur.
Cureton Sash & Door Company, Dothan.
W. R. Flowers Lumber Company, Dothan
Arnold Lumber Company, Ensley.
F. M. Deer, Evergreen.
Acme Lumber & Manufacturing Company, Florence.
Houghton Column Company, Florence.
Richardson Lumber Company, Florence.
Garden City Hickory Company, Garden City.
Straiton Bros., Greensboro.
G. A. Plummer, Huntsville.
C. D .Martin, Jacksonville.
Bell & Holloman, Kennedy.
Dauphin Lumber Company, Mobile.
Hieronymous Dock & Lumber Company, Mobile.
Hill & Horton, Mobile.
Mobile Column Company, Mobile.
F. C. Turner & Co., Mobile.
Verona Lumber Company, Mobile.
S. Y. Bocacki, Montgomery.
Cramton Lumber Company, Montgomery.
Enterprise Planing Mill Company, Montgomery.
Highland Park Lumber Company, Montgomery.
J. H. Brewer, Moulton.
W. A. Andrews, Opelika.
Opelika Lumber Company, Opelika.
Ozark Hardware & Lumber Company, Ozark.
Paint Rock Planing Mill, Paint Rock.
Butts Lumber Company, Phoenix.
S. M. Long, Range.
J. C. Hannah & Sons, Reform.
Lathrop-Hatten Lumber Company, Riverside.
Batterson & Plumley, Selma.
Dallas Lumber Company, Selma.
A. E. Reimer, Selma.
Schuh-Mason Lumber Company, Selma.
Sheffield Hub & Column Company, Sheffield.
N. C. Dyer, Stanton.
Hauser & Wheeler, Stevenson.
W. T. Sisson, Tallassee.
Thomasville Manufacturing, Electric Light & Power Company, Thomasville.
W. E. Hanchey, Troy.
Tuscaloosa Column Company, Tuscaloosa.
Tinney Lumber Company, Waldo.

Shuttles, Spools, Bobbins, Etc.

J. W. Reece, Decatur.
Hallett Manufacturing Company, Mobile.
Alabama Hardwood Company, Montgomery.

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seems to have spread northward through the peninsula of Florida into the adjacent regions further north, and it is still spreading rapidly by taking advantage of openings in the forests of other species, made by lumbermen.

Cypress.—Alabama is not a large producer of cypress when compared with Louisiana, Florida, Mississippi, and some other states. This tree thrives best in swamps, and Alabama has no large tracts of such land. Two species of cypress grow in this state, but they are so nearly alike that few recognize any difference between them.

Magnolia.—Two species of magnolia are in use—the evergreen and the sweet. The former is more abundant, the trees of greater size, the leaves are longer, and the flowers much larger, being from six to eight inches across; the sweet magnolia being only two or three inches. The wood of the evergreen magnolia bears some resemblance to yellow poplar, though the heart is often much darker; while the wood of the sweet magnolia (the heartwood) is a rich brown that polishes well, and when carefully selected and finished, it is one of the handsomest woods of the southern forests.

Red Cedar.—A very small part of the total cut of cedar in Alabama is shown in Table 1, because that represents only what passes through shops and manufacturing plants, while the bulk of the cedar is used for poles and posts. In northern Alabama the railroad yards are filled with cedar poles and posts, the former for telephone and telegraph lines, the latter for fences. Many are shipped to other state. Pencil manufacturers search so diligently for cedar that it is not unusual to see a train load of old cedar fence rails on the way to market, there to be converted into pencils. In some instances buyers of cedar build a new post and wire fence in exchange for the old cedar rails. This is a remarkable change from twenty-five years ago. There are two species of red cedar in Alabama, but they are so similar that few persons recognize the difference, and in the market no distinction is made. Red cedar holds its ground with remarkable vigor. If it were not such a slow-growing tree it would be one of the most valuable in this country. It is found in more than half of the United States, but it thrives best in the South. In a region extending from eastern Tennessee, northern Georgia, and eastern Kentucky to central and western Texas, it is not unusual to see this cedar in tens of thousands, taking possession of stony ridges, sterile hillsides, sandy flats, and steep ravines. Posts by millions are now cut from land where fifty or seventy-five years ago few cedars grew. This statement applies to a wider region than Alabama, but as much to that state as to any other. If left growing for a long period of years—a century or more—these cedars would attain a size fitting them for use in the manufacture of pencils, chests and furniture, but the ordinary land owner does not want to wait so long and he cuts his trees when they are large enough for posts and poles. The mature cedars that stood in old forests have nearly all been cut to meet demand in the past. Houses, barns, mills, bridges, and fences were formerly often built in part or wholly of cedar. That, of course, is no longer possible.

Hickory.—Seven or eight species of hickory are grouped as one in Alabama and are reported by manufacturers simply as hickory. That is the practice in all hickory regions, because it has been found impossible, or at least impracticable, to separate and distinguish between the different hickories. Among those growing in Alabama are bitternut, nutmeg, pecan, paleleaf, pignut, mockernut, shagbark, and water hickory.

Birch.—The remarks concerning hickory apply also to birch, except that fewer species are used in Alabama, and all that was reported came from outside the state. The birches which possess attractive color and grain, and for that reason are demanded for furniture and finish, consist principally of two species—sweet birch (*Betula lenta*) and yellow birch (*Betula lutea*). Both are northern trees, extending southward along the Appalachian Mountain ranges to North Carolina and Tennessee. Birch that is cut in the Lake States is usually yellow birch, though sweet birch is lumbered in that region also; while birch from Pennsylvania, Maryland, West Virginia, and neighboring regions is likely to be the sweet species, though yellow birch is cut also. Several other birches grow in the United States and are valuable for certain purposes, but the majority of them show little color, grain or figure in the wood. No one of them is reported for use in Alabama. The river birch (*Betula nigra*) grows in considerable abundance along the streams of that state and is doubtless put to use though not reported. It is a plain but substantial wood.

Yellow Poplar.—In addition to supplying its own shops and factories with nearly twelve million feet of yellow poplar, the state of Alabama is now exporting large numbers of poplar logs to Europe. The logs are stripped of bark to reduce weight and lessen the space they will occupy in the holds of vessels. This splendid timber tree reaches the southern limit of its commercial range in Alabama.

Gum.—Table 1 lists the wood of three species of gum in Alabama, red, black and tupelo. Two other gums grow in the state and doubtless are made use of, though not reported. They are the water gum (*Nyssa biflora*) and sour tupelo (*Nyssa ogeche*).

The Oaks.—In Table 1 six oaks are listed, white, red, post, willow, pin and Texan. This separates the oaks into species, with the amount of each used, with as much accuracy as available information will allow; but its absolute accuracy is doubtful. It is reasonably certain that more than six kinds of oak are used by Alabama manufacturers, and it is probable that several were grouped under one or more names. Water oak, yellow oak, and live oak are fairly abundant in Alabama, yet do not appear in the table, while red oak (*Quercus rubra*) barely enters the northeastern corner of the state, yet it was largely reported. The most likely explanation is that some of the oaks, which do not appear under their own names, were reported as red oak. In compiling this report, the figures furnished by manufacturers were used, but an explanation is deemed necessary because of the various names by which the same oak may be known and reported. White oak and red oak are two general terms by which many lumbermen report oaks of various species. Those which have pointed-lobed leaves and ripen their acorns in two years are generally called red oak, and those with one-year acorns and round-lobed leaves are known as white oak. There are about fifty oaks in the United States, and at least one-third are found in Alabama. Among them are white oak, red oak, post oak, overcup oak, chestnut oak, chinquapin oak, cow oak, Durand oak, live oak, Texan oak, yellow oak, Spanish oak, black jack oak, water oak, shingle oak, and willow oak.

Dogwood.—This is not a timber tree as the term is usually understood, but is cut in considerable quantity and is usually bought and sold by the cord.

Elm.—Manufacturers reported the use of only one elm in the state, the white elm. That is the common and most abundant elm in the United States, and it grows in practically all the states east of the Rocky Mountains. Alabama has two other species of elm, both serviceable for manufacturing purposes, and doubtless both are in use. They are wing elm and slippery elm; the latter may be known by its mucilaginous inner bark, and the former by the flat keels on the twigs and sometimes on the large limbs and trunk of the tree. When this elm is not in leaf, the peculiar appearance of the flat twigs will not fail to attract attention.

Chestnut.—In Alabama the chestnut approaches the southern limit of its range.

Cottonwood.—This wood does not occupy an important place in Alabama, either as rough lumber or as a finished product. Only thirteen mills in the state cut it in 1910, while there were 110 in Mississippi, 126 in Arkansas and 300 in Missouri.

Persimmon.—The persimmon is not cut for general lumber but for special commodities, principally shuttle blocks, and golf sticks.

Mahogany.—The mahogany used in Alabama was grown in West Indies, Mexico and Central America. Another wood usually classed as mahogany and largely demanded by manufacturers of furniture and finish in this country comes from Africa.

Green Haw.—This wood is seldom reported by wood-using industries. It may reach eight or ten inches in diameter of trunk. The wood is light in color, resembling ironwood.

Wild Cherry.—This is not a foreign tree brought into this country, as its name might imply. It grows from Georgia to Arizona, but probably will never attain to any more importance in the timber supply than it now holds. It is sometimes called soap berry because substances extracted from the roots and the fruit have been used for soap. The true soap berry is a closely related species.

Hackberry.—This tree grows in practically all sections of the state, and is often bought and sold as ash.

Black Walnut.—A little black walnut is used in Alabama, but none of it is state-grown. This wood was once popular for many purposes, but it has lost some of its popularity in recent years. If it were demanded now in as large amounts as formerly, the price would be very high, for the wood is scarce, and no unculled forests exist from which new supplies may be drawn.

Spanish Moss (Dendropogon usenoides).—This is not a wood, but as a product of the forest it is entitled to mention. It is gray in winter but light green in spring and summer, and hangs in long festoons from the branches of trees. It is most abundant in swamps, and on the flood plains of rivers. On dry uplands it is scarce or absent. In localities which, because of warmth and dampness, favor its growth, it frequently covers trees so completely that most of the branches are invisible. Although the growth has the appearance of moss, and is nearly always spoken of as such, it is not really a moss, but a plant of the pineapple family, and it bears leaves, flowers and fruit. It is not even a parasite, according to the opinion of most botanists who have studied it; that is, it takes no substance from the tree on which it grows. It is an air plant, deriving its subsistence from the air and the rain and dew. It is propagated either by seeds or by small parts of a parent plant blown by wind against the trunk or branches of the tree. Small rootlets develop at first and secure the young plant in its new position by tying it to the tree's bark; but afterwards the rootlets disappear and the plant hangs on the tree much as clothes might hang across a line. It grows in strands and festoons which may attain a length of several feet, usually three or four, but occasionally more than ten.

Early settlers attempted to convert the moss into provender for farm stock, but with little success, though it was said that deer in winter would eat it. It has long been employed as filling for mattresses, cushions, and horse collars. It is prepared for such use by curing and ginning it, by which process the gray or green leaves and bark are removed, and a black thread-like material, resembling horsehair, remains. In late years another use for it has been found, and the market is said to be good. The moss is dyed bright colors, generally green or blue, and is sold for store decorations where woodland scenes are to be imitated. It is sent to market in crates or bales.

In Table 1 the third column of figures gives the average price paid at the factories for each of the species. Where the amount is large and the buyers many, the cost shown in the table may be accepted as representative but in some instances the amount of wood is rather small, and perhaps the whole quantity was purchased by two or three factories, and the cost may appear too high or too low. This may be explained by the circumstances under which the purchases were made. If the wood is wanted for a special purpose, none but a very high grade may answer, and the price will be unusually high. Or, if a very low grade will do, the cost may be unusually low. In some instances in Alabama black walnut was bought for less than twenty dollars a thousand feet. Without an explanation that price would seem ridiculous, but it becomes reasonable if it is stated that the purchase was in the log, and the logs were small, nearly all sapwood, and suitable only for boxes or some other common purpose. In Table 1, pin oak costs $40 a thousand, Texas oak $38.40, while red oak costs only $18.91, and white oak $20.17. On the face of it, the prices seem absurd for it is well known that ordinarily pin oak and Texan oak are not worth more than white and red oak. But the two latter woods were purchased in millions of feet each, and the costs are averages of many sales; while only a few thousand feet of pin and Texan oak were bought, and for particular purposes demanding extra high quality. The statistics as compiled for these tables in this report show what was actually reported by manufacturers. If in a few instances apparent inconsistencies are found in cost, they may generally be attributed to the smallness of the amount bought, or to the fact that it was of unusual quality or dimensions.

Planing-Mill Products.

This is very much the largest wood-using industry in Alabama, and accounts for eighty per cent. of all the wood reported. When the further fact that ninety-six per cent of all shown in Table 2 consists of two species, longleaf and shortleaf pine, is considered, the importance of these species becomes apparent. The principal commodities included in this industry are flooring, molding, ceiling, siding and other finish for interior and exterior of buildings. The average cost of the rough lumber when it reaches the planer is low, $11.72; and its low cost is chiefly due to the fact that most of the operators of planing mills are owners of sawmills also, and the cost of the lumber is figured upon the price of stumpage (often for less than such stumpage can now be bought), the delivery of the logs to the mill and the sawing. Estimated in that way, the average cost is shown to be very low. In many cases, no profit is included and sometimes not even the depreciation of the plant.

A number of large mills in Alabama employ convict labor under contract with the state, paying $25 to $30 per man per month. The effect on production is apparent. The mills are kept going in dull seasons, for the expense goes on and must be met, with the result that overproduction is stimulated. In some of the Southern states, cotton planters are asked to reduce their acreage when there is danger of too much cotton being grown. The sawmills might adopt the same policy, but those who are under contract to pay for convict labor can not join the others in curtailing output, for the labor charges go on and must be earned by operating the plants. The sentiment among business men in some parts of the state is pretty strong that the state should employ its convicts upon public roads where their labor will be less likely to conflict with private enterprise, and sound business principles.

84,130,000 feet for longleaf pine to 500 feet for erry, and in average cost per 1,000 feet, delivered the factory, from $131.24 for mahogany to $10 for asswood and sycamore. It is reasonably certain that veral additional species are in use though not separately reported. Among the oaks, doubtless yellow oak *uercus velutina*) and water oak (*Quercus nigra*) e in use, for they are plentiful and of good form some parts of the state. One birch is listed, but obably three at least are in use, the sweet birch *etula lenta*), yellow birch (*Betula lutea*) and ver birch (*Betula nigra*). Several species of hickry are generally grouped as one; two cypresses botanically distinct are considered one at the sawmill; two or three elms grouped under a common name; hackberry and sugar berry are not distinguished apart, and doubtless other woods are grouped and given a common name, or else they may be lost sight of entirely in the lumber yard. It is not customary for lumbermen and manufacturers to distinguish as carefully between species as botanists do, nor, for practical purposes is it necessary to do so. However, each wood possesses an individuality of its own, and has certain qualities and characters which differ from those of all other woods, and it may be expected that as woods become more valuable, and their fitness for specific purposes shall be more carefully studied, the custom of using them indiscriminately and without regard to their names, will gradually pass away. Perhaps not much change should be expected in the grouping and names of old familiar species; but a large number of less plentiful and less known woods are coming into use to meet special requirements or to take the place of woods which are becoming scarce. It will soon become necessary to apply names to these in order that the trade may intelligently handle them. Alabama has at least twice as many useful woods as are shown in Table 1 which follows:

TABLE 1.

SUMMARY OF KINDS OF WOOD USED IN ALABAMA.

Kinds of wood.		Quantity used annually		Average cost	Total cost	Grown in Alabama, per cent.	Grown out of Ala., per cent.
Common name—	Botanical name—	Feet B. M.	Per cent.	per 1,000 ft.	f. o. b. factory		
Longleaf pine	Pinus palustris	484,130,000	66.61	$11.92	$5,770,692	93.92	6.08
Shortleaf pine	Pinus echinata	165,148,500	22.72	11.56	1,909,434	99.03	.97
Red gum	Liquidambar styraciflua	18,666,200	2.57	11.62	216,989	94.52	5.48
White oak	Quercus alba	12,380,800	1.70	20.17	249,674	95.25	4.75
Yellow poplar	Liriodendron tulipifera	12,275,500	1.69	15.59	191,409	97.60	2.40
Tupelo	Nyssa aquatica	7,932,000	1.09	10.23	81,159	97.35	2.65
Red oak	Quercus rubra	5,943,500	.82	18.91	100,504	94.83	5.17
Hickory	Hicoria	5,281,000	.73	21.03	111,055	99.34	.66
Loblolly pine	Pinus taeda	2,850,000	.39	11.86	33,800	100.00	.00
White ash	Fraxinus americana	2,330,500	.32	21.29	49,610	77.13	22.87
Cypress	Taxodium distichum	1,823,000	.25	15.05	27,430	88.21	11.79
Spruce pine	Pinus glabra	950,000	.13	14.71	13,975	68.42	31.58
Post oak	Quercus minor	860,000	.12	19.07	16,400	99.30	.70
Dogwood	Cornus florida	750,000	.10	14.20	10,650	60.00	40.00
Cuban pine	Pinus heterophylla	725,000	.10	11.26	8,162	100.00	.00
White elm	Ulmus americana	570,000	.08	14.89	8,490	100.00	.00
Evergreen magnolia	Magnolia foetida	515,000	.07	10.15	5,225	100.00	.00
Black gum	Nyssa sylvatica	486,000	.07	10.53	5,120	100.00	.00
Chestnut	Castanea dentata	485,000	.07	15.55	7,540	13.40	86.60
Cottonwood	Populus deltoides	481,500	.07	18.96	9,108	100.00	.00
Birch	Betula	375,000	.05	27.57	10,340	.00	100.00
Persimmon	Diospyros virginiana	326,000	.04	15.03	4,900	100.00	.00
Beech	Fagus atropunicea	320,000	.04	10.36	3,315	96.88	3.12
Willow oak	Quercus phellos	259,000	.04	20.80	5,386	46.33	53.67
White pine	Pinus strobus	221,000	.04	41.27	9,120	.00	100.00
Mahogany	Swietenia mahogani	158,600	.03	131.24	20,815	.00	100.00
Sweet magnolia	Magnolia glauca	148,000	.02	11.10	1,643	100.00	.00
Red cedar	Juniperus virginiana	130,000	.02	23.46	3,050	61.54	38.46
Black walnut	Juglans nigra	62,500	*	36.64	2,290	.00	100.00
Pin oak	Quercus palustris	60,000	*	40.00	2,400	.00	100.00
Texan oak	Quercus texana	59,900	*	38.40	2,300	90.15	9.85
Hackberry	Celtis occidentalis	50,000	*	15.00	750	100.00	.00
Sugar maple	Acer saccharum	35,000	*	17.57	615	71.43	28.57
Basswood	Tilia americana	10,000	*	10.00	100	.00	100.00
Green haw	Crataegus viridis	9,900	*	15.00	150	100.00	.00
Sycamore	Platanus occidentalis	7,000	*	10.00	70	100.00	.00
Wild china	Sapindus marginatus	1,000	*	15.00	15	100.00	.00
Cherry	Prunus serotina	500	*	100.00	50	.00	100.00
Totals		726,816,900	100.00	$12.24	$8,893,735	94.99	5.01

*Less than 1/100 of 1 per cent.

Longleaf Pine.—In quantity this is by far the most important wood used by manufacturers in Alabama. It has needles longer than those of other pines associated with it; its sap is thinner in proportion to the heart wood than is that of any other pine; and in strength and stiffness it ranks among the best and above most other timbers of the state. It is one of the slowest growing pine of the South, and for that reason it is not likely to figure as much in future supply as some of its associates which grow faster, thereby producing a new forest in a shorter time. The original stands of this species are of fine form for lumber, they shade the ground so effectively that they suppress the seedlings of most other trees, and thus they have held their place for long periods of time in nearly pure forests. But when the old stand is removed by lumbermen, or is thrown by storm, and the sunlight enters, the longleaf seedlings are unable to maintain their place under the pressure of competition from more vigorous species (loblolly and Cuban pines in particular) and the former longleaf forest is gradually replaced by other kinds of trees. The encroachment of farms upon the longleaf forest, however, is doing as much as any other cause, or all other causes combined, to end the supremacy of the longleaf pine. The land where this tree is at its best is not the most fertile in the region, but it has been found well suited for root crops, and in many instances for orchards, and as the lumberman takes the pine off, the farmer and the fruit grower enter into possession. For this reason, and for the reason already stated, that the young longleaf pine is often unable to compete in the struggle with other species for possession, it may be expected that the cutting of this species will practically come to an end when the primeval forests have been removed. It has been and still is a most valuable resource, but its importance may be expected to decline in the future.

Shortleaf Pine.—Men engaged in the lumber business often group two or three pines under the name shortleaf. Loblolly and Cuban pine are liable to be so classed, though botanically they are quite distinct species from the shortleaf (*Pinus echinata*). In Table 1 shortleaf stands next to longleaf in quantity and that is doubtless its proper rank in Alabama; but there is little doubt that much loblolly and Cuban pine have been reported as shortleaf. The needles of shortleaf pine are usually three to five inches long; those of loblolly six to nine inches; the Cuban eight to twelve inches, while those of longleaf pine are sometimes as much as eighteen inches in length, though usually considerably shorter. Shortleaf pine has thick sapwood, except in large and old trees. It grows rapidly during its first forty to sixty years, and more slowly afterwards. It reproduces vigorously, and quickly takes possession of openings in the forest. The wood is weaker and softer than longleaf, but for some purposes—notably for doors, frames and interior finish—it is preferred to longleaf by many, while for floors, beams and long, heavy timbers, longleaf usually gives better service. The shortleaf pine is found in practically all parts of Alabama, but is not equally distributed over the state, being scarcer in some localities than in others.

Loblolly Pine.—This pine shows a disposition to take complete possession of ground when it finds conditions favorable, such as abandoned farms, or tracts from which other forest trees have been removed. This is the tree which, within the past century, and particularly in the past fifty years, has occupied so much abandoned farm land in Virginia, North Carolina, and further south and west. It grows rapidly, and young trees, up to a foot or more in diameter, are largely sapwood. It is a large contributor to the lumber supply of the South, and the fact that less than 3,000,000 feet are credited to it in Alabama, as shown in Table 1, is pretty strong evidence that it has gone to market under some other name, most probably as shortleaf.

Spruce Pine.—In "Timber Pines of the Southern United States," by Charles Mohr, published in 1897, an apology for including this tree was thought necessary; for it was considered of little or no commercial value at that time, and it was given place among the timber pines "in order to dispel for the future its confusion with some of these trees." The opinion concerning spruce pine held at that time has been much modified since; and though the species is not abundant, the lumber is considered excellent. Of all the southern pines, the wood of this tree has been pronounced the nearest approach to white pine. The tree grows rapidly; is nearly all sapwood until the trunk reaches maturity; and it thrives in the shade better than any of the pines with which it is associated. The wood is in demand for doors, sash and frames; it is white and clean, and holds its shape well. The tree's leaves are among the shortest of the pines. Charles Mohr, whose unfavorable opinion has been referred to, predicted that when forestry methods came into practice in the South, the spruce pine would be found worthy of attention.

White Pine.—This tree does not grow in commercial quantities in Alabama, and what is used comes from the Lake states or from the mountains of eastern Tennessee, Kentucky, or western North Carolina. A western wood (*Pinus ponderosa*) is making its appearance in some southern shops and factories under the name of white pine or California white pine. It belongs to the yellow pine group. It was not separately reported in Alabama.

Cuban Pine.—This valuable tree belongs to the southern yellow pine group and is much used, though it generally goes to market under some other name—sometimes as longleaf, occasionally as shortleaf, but more frequently as loblolly. The standing tree resembles longleaf, but the appearance of the wood—its thick sap and small heart—resembles loblolly. In strength it is little or not at all inferior to longleaf. The tree reproduces vigorously, spreading upon open land; it grows rapidly and comes to merchantable size much sooner than longleaf; and it promises to become one of the most important timber trees of the state. Judging from its geographical location in this country, the Cuban pine

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Sporting and Athletic Goods.

J. W. Reece, Decatur.
Hallett Manufacturing Company, Mobile.
Innis Golf Club Company, Montgomery.

Vehicles and Vehicle Parts.

Hale Buggy Company, Anniston.
Cruse & Coleman, Birmingham.
Jervis Lumber Company, Decatur.
H. H. Hitt Lumber Company, Falkville.
Florence Wagon Works, Florence.
Garden City Hickory Company, Garden City.
Globe Carriage Works, Montgomery.
J. H. Hibble & Son, Piedmont.
The Selma Spoke Company, Selma.
Sheffield Hub & Column Company, Sheffield.
M. R. Campbell, Stevenson.
J. F. Mitchell, Stevenson.
D. W. Boatright, Tallassee.

Woodenware and Novelties.

Andalusia Manufacturing Company, Andalusia.
Randolph Lumber Company, Birmingham.
W. R. Flowers Lumber Company, Dothan.

USES OF WOOD.

Manufacturers and others in Alabama report uses for the different woods as follows:

Basswood.

Balusters, blinds, cabinets, casing, doors, interior finish, mantels, sash, shelving, stairwork, trams.

Beech.

Chairs, door frames, drawer sides and bottoms, finish, flooring, interior finish, siding, window frames.

Birch.

Ceiling, chairs, doors, fixtures, flooring, interior finish, magazine racks, music cabinets, partition, sash.

Black Cherry.

Baseboards, bookcases, ceiling, coaches (passenger), furniture, hat racks, interior finish, molding, partition, stands, tables.

Black Gum.

Boxes (packing), crates (berry), finish, grape baskets, interior trim, mine rollers, novelties, pails, tubs, woodenware.

Black Walnut.

Chests, china closets, drug cabinets, fancy boxes, finish, fixtures, kitchen cupboards, showcases, stairwork.

Chestnut.

Cars (freight), ceiling, coaches (passenger), doors, interior trim, mantels, molding, partition, sash.

Cottonwood.

Baskets, box covers, boxes (packing), brush heads, excelsior, ginning machinery, sample cases, trays, trunks, vehicle parts.

Cuban Pine.

Boxes, cars (freight), ceiling, coaches (passenger), flooring, interior finish, peach crates, siding.

Cypress.

Boats, boxes (packing), caskets, chair rounds, coffin boxes, columns, interior finish, chips (outside trim), silos, tanks, vats.

Dogwood.

Bobbins, golfshaft heads, shuttles, spindles, spools.

Evergreen Magnolia.

Bookcases, chairs, desks, furniture, hat racks, stands, tabourets, umbrella stands.

Green Haw.

Chair rounds, furniture stock, lawn furniture, racks, rustic chairs, stands, table legs.

Hackberry.

Furniture backs, lawn furniture, racks, rakes, rustic chairs, stands.

Hickory.

Axles, buggy poles, chairs, doubletrees, farm implements, felloes, gearing, golfstick shafts, handles, pickersticks, reaches, rims, singletrees, spokes, sucker rods, sweeping fiber, tool handles, vehicle stock.

Loblolly Pine.

Agricultural implements, boxes, cars (freight), cars (railroad), ceiling, coaches (railway), excelsior, finish, flooring, interior trim, kitchen safes, molding, newels, porch posts, sash, shiplap, siding, wagon boxes.

Longleaf Pine.

Boats, boxes, buffets, cabinets, cars (railroad), china closets, coaches (railway), coffins, columns, crates, doors, engine parts, excelsior, fixtures, flooring, furniture, gin machinery, interior finish, kitchen safes, mantels, medicine cabinets, novelties, sash, school desks, ships, sideboards, siding, tables, turned stock, wagon boxes, woodenware.

Mahogany.

Cabinets, coaches (passenger), finish, fixtures, interior trim, magazine racks, music cabients, street cars.

Persimmon.

Bobbins, golfstick heads, shuttles, spindles, spools.

Pin Oak.

Bolsters, felloes, gearing, poles (wagon), spokes, vehicle stock.

Post Oak.

Buggies, chairs, furniture, hubs, vehicle stock, wagon poles.

Red Cedar.

Boxes (clothes), boxes (fancy), boxes (tobacco), cabinets, chests, china closets, faucets, novelties, sideboards, wardrobe shelves.

Red Gum.

Agricultural implements, baskets, beds, boxes, brush heads, bureaus, ceiling, chairs, crates, desks, dressers, egg crates (tops and ends), finish, fixtures, flooring, furniture, gin brush ribs, gins, grape baskets (tops and ends), hampers (clothes), handles, kitchen safes, mine rollers, partition, shooks, siding, tables, wagon boxes.

Red Oak.

Car construction, ceiling, coaches, counters (store), engine repairs, flooring, interior finish, newels, porch posts, siding, vehicles.

Shortleaf Pine.

Boxes (packing), cars (railroad), caskets, ceiling, coaches (railway), columns, cornices, cotton gins, crates (tops and bottoms), doors, fixtures, flooring, handles, interior finish, molding, partition, sash, siding, turned stock, vehicles, wagon boxboards.

Spruce Pine.

Baskets, boxes, ceiling, crates, flooring, interior finish, panels, partition, siding.

Sugar Maple.

Baseboards, cabinets, ceiling, columns, finish (interior), flooring, handles, mantels, molding, panels, partition, siding.

Sweet Magnolia.

Boxes (berry), crates (berry), furniture, grape baskets, interior finish, racks.

Sycamore.

Boxes (packing), crates, flooring, interior finish, shooks.

Texan Oak.

Felloes, gearing, hubs, wagon poles.

Tupelo.

Beds, boxes (packing), boxes (tobacco), columns, dressers, egg crates (sides and bottoms), finish, flooring, furniture backs, kitchen cabinets, mantels, novelties, panels, refrigerators, safes, tramways.

White Ash.

Box ends, cars, chair legs, engine parts, gin machinery, handles, poles, vehicle stock.

White Elm.

Baskets, boxes, crates, furniture stock, hampers (clothes), hubs, packing (fruit), trunk slats, vehicle stock.

White Oak.

Agricultural implements, axles, bank fixtures, beds, boats, bolsters (wagon), brackets, cabinets, cars, casing, ceiling, chairs, coaches (railway), columns, cornices, cots, desks, doors, doubletrees, dressers, felloes, finish fixtures (office) fixtures (store), flooring, gearing, gin machinery, mision furniture, panels, partition, poles (wagon), safes, sash, ships, siding, single trees, spokes, stands, tables, vehicle stock.

White Pine.

Agricultural implements, blinds, cabinets, caskets, columns, doors, flooring, interior finish, sash, turned stock.

Wild China.

Boat finish, interior trim, laundries, lawn furniture, novelties.

Willow Oak.

Furniture, kitchen safes, panels, partitions, stands tables.

Yellow Poplar.

Agricultural implements, bed slats, box ends (fruit), boxes (packing), brackets, cabinets, cars, ceiling, china closets, coaches (railway), colonial columns, cots, desks (drawer bottoms), doors, finish, fixtures, flooring, furniture, gins (feeders and pressers), handles, kitchen safes, mirror backs, molding, partition, pins, sash, scrolls, shelves, stairs, trunk trays, wagon (boxboards).

APPENDIX.

The Bureau of the Census, in co-operation with the Forest Service, collects and publishes year by year statistics showing the output of lumber, lath, shingles, cooperage, veneer, and certain other forest products in the United States and in the separate states. That work is independent of the studies of the manufactures which the Forest Service has made in several of the states. The latter supplements the former, and care is taken that work done by the Bureau of the Census, is not duplicated. The Forest Service begins where the Census leaves off—after lumber leaves the sawmill. There are certain products which are in their finished form when they appear in the Census figures, and for that reason they are outside the scope of the Forest Service's study, because they are not subject to further manufacture. If, however, a state's wood-using industries are to be fully presented, it becomes necessary to include some of the census statistics. Such is one of the purposes of this appendix. The figures which the census gives are for all states, but such only as relate to Alabama are here presented and in condensed form.

The statistics are for the year 1910, which are the latest available.

Alabama's cut of shingles for that year was 142,810,000, principally of cypress and pine, and of an average value of $2.86 per thousand at the mill.

Lath were manufactured to the number of 40,982,000 and of the value of $1.88 per thousand at the mill. Waste, consisting of slabs and defective logs, is largely worked into lath, and various woods are taken, but in Alabama the yellow pines constitute most of this material.

Nearly 27,000,000 feet (log measure) of veneer is made yearly in Alabama, for various species of wood, but most of it is yellow pine, red gum, tupelo, magnolia and cottonwood. Expensive hardwoods, such as white and red oak, black walnut and mahogany, are the materials of which the highest classes of veneers are made. There are three methods of manufacturing the commodity: rotary-cut, sawed and sliced. Most of it in Alabama is rotary-cut. A log a few feet long is placed in a lathe and is turned rapidly against a strong knife which peels off a thin ribbon of wood the length of the log, round and round until the log is cut down to a small central piece called the core. The part sliced off may consist of one piece probably one hundred feet long, resembling a bolt of cloth. It is usually about as thick as a sheet of pasteboard. The veneer thus cut is made into small boxes, crates and baskets for shipping fruits and vegetables; or, if it goes to a furniture factory, it is made into panels or other pieces by gluing several sheets one upon another until the desired thickness is obtained. Sometimes a thin sheet of veneer is glued upon a thick piece of some other wood, and the veneer becomes the visible outer part. Much furniture and interior finish is made in that way. The finished article appears to be solid wood, but it really is a thin layer of outside veneer upon some cheaper wood. This cheaper wood, which is concealed by the veneer glued upon it, is called "backing" or "core." The word "core" has, therefore, two meanings when used in connection with veneer. It may mean the wood upon which the veneer is glued, or it may mean the central remnant of a log from which veneer has been cut by the rotary process.

Some veneers are sawed much as ordinary lumber is cut on a sawmill, but special machinery is used. The most important part is the extra thin saw which cuts the veneer with the least possible waste in sawdust. Veneer of this kind is generally made from valuable, well-seasoned hardwoods, while rotary-cut veneer is made from logs, generally in the green state, and usually steamed to soften them. The rotary-cut veneer is often in sheets several feet wide and many yards long; but the sawed veneer is generally less than a foot in width, and runs about like ordinary lumber in length. The sawed product often shows the grain of the wood—quarter-sawed if the wood permits it. Sliced veneer is cut from the side of the log, like that which is sawed, but a knife is used in place of a saw, and the machine by which the slicing is done is very strong and rigid. One of the advantages of slicing over sawing is that the slice wastes no sawdust.

Annual Lumber Cut.

The cut of lumber in Alabama, by species, in 1910, was as follows:

Yellow pines	1,322,950,000
Oaks	67,485,000
Yellow poplar	26,701,000
Red cedar	13,693,000
Red gum	10,541,000
Tupelo	6,227,000
Hickory	5,079,000
Cypress	3,340,000
Maple	2,231,000
Ash	2,146,000
Cottonwood	1,683,000
Chestnut	637,000
Elm	561,000
Beech	497,000
Basswood	461,000
Black walnut	332,000
Sycamore	207,000
Birch	7,000
All others	870,000

Softwood Distillation.

One-third of all the softwood distillation in the United States in 1910 was in Alabama. Four large plants consumed 64,963 cords of wood. This does not include a little charcoal burning in old-style pits in various parts of the state. Pits of that kind make charcoal only and other products are wasted. The modern distillation plant saves a number of products. Two processes are in use, known as "steam distillation" and "destructive distillation." In the former, the turpentine and heavy oils of pine are forced from the wood by subjecting it to the action of hot steam. The wood is not converted into charcoal by that process. "Destructive distillation" is so called because it destroys the wood, and converts it into turpentine, tar and charcoal. Dry heat is the agent of destruction. In Alabama the longleaf pine is most used in distillation, but shortleaf and Cuban pines are profitable in this industry. There is much difference in the yield of different woods. Only one-half of the material employed in the distillation processes is "body wood" logs. The rest is what otherwise would be wasted, such material as sawdust and edgings.

The collection of resin from standing trees is not included in the statistics of wood distillation. The resin is drawn from the trees by wounding the bark and outer layers of wood while the tree stands. The old way—still largely in use—was to cut a deep notch in the tree (often two or more notches) called a box; the bark and some of the wood was then cut away above, and the resin exuded fro mthe wounded wood and ran down into the box, from which it was collected from time to time. A new method is coming into use, by which the tree is less severely injured. No box is cut in the trunk, but the bark is removed over a small space, and a tin "gutter" or "apron" is applied to collect the resin and lead it to a tin or other receptacle. At the present time in Alabama about five trees are worked by the old process to one by the new. In 1909 the state produced 2,840,000 gallons of spirits of turpentine, and 310,000 barrels of rosin. The rosin is what is left over, when the spirits of turpentine have been separated by distillation. The substance as it exudes from the tree is resin. The stills ordinarily used are simple apparatus, and no special scientific knowledge is needed to operate them. In the whole United States the output in 1909 of spirits of turpentine was 28,989,000 gallons, and of rosin 3,264,000 barrels. Most of it is produced in the southern states. Alabama's output both of spirits of turpentine and of rosin is declining. Other states are declining also, owing to the depletion of large areas of longleaf pine forests.

Cooperage.

Alabama in 1909 produced 12,978,000 tight cooperage staves; that is, staves for barrels and kegs which are meant to contain liquids. Its output of staves for slack cooperage (barrels and kegs not meant to contain liquids) was 14,977,000, all of which were pine. Four million sets of pine heading were produced, and an equal number of hoops.

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WOOD USING INDUSTRIES OF ALABAMA

Bureau of Wood Utilization of Forest Service Tells of Plant Already Established and Opportunities for New Enterprises Division of Various Woods among Existing Manufactures.

NOTE.

The following report was prepared by John T. Harris, statistician, and Hu Maxwell, expert, under the direction of H. S. Sackett, chief of the Office of Wood Utilization, United States Forest Service. It is published and thus made available to the public through the courtesy of the LUMBER TRADE JOURNAL, New Orleans, La.

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PREFACE.

The state of Alabama embraces 33,000,000 acres, of which about 24,000,000 are classed as wooded land, 9,000,000 farm land, and 500,000 water surface In this division the water surface alone remains fairly constant, while the proportionate amounts of wood and agricultural land change from year to year. In some instances, old fields are lapsing into forest, but in many more instances the wooded areas are being converted into farms. In its original condition the whole region now included in Alabama was wooded, the exceptions being so few as to be unimportant. Clearings were made in a small way by the native Indians who cultivated corn, pumpkins, and melons; and about 200 years ago more extensive clearings were begun by the first European settlers. From that time until the present, the primeval forests have steadily given way to cotton, grain and tobacco. For a long time the timber was an encumbrance, as was the case in so many other parts of the United States where the ground was wanted for crops. A little was used for fences, bridges, and buildings, but there being no manufacturing, most of the timber cut in clearing farms was burned either for fuel, or in log heaps. Although Alabama has anchorage and sea coast, the early people built few ships, and sought no over-sea trade. As early as 1777, however, naval stores were manufactured to a small extent at Mobile, the chief product being tar.

The soft woods; that is, pines and cypresses, grow in all regions of Alabama, though not everywhere equally dispersed; but the pine belt, where the finest forests of longleaf pine are found is about fifty miles wide and lies in the southern part of the state on lands usually flat and sandy. The general elevation of this belt is not much above sea level. Next above this, northward in the state, is the cotton belt, which consists of broad, rolling prairies, with many strips of timber still remaining. The soil is black and fertile and the region is crossed by many streams. Still north of this is the mineral belt, where coal and iron are mined and constitute the chief wealth of the region at this time. Timber of some kind is found all over the hills, beneath which the minerals lie. This timber has been and still is of much value in mining operations, though in this report little mention is made of it for the reason that most mine timbers are used in the rough—as pit posts, props, ties, lagging, etc.—and this report deals with manufactured products only. Considerable areas of pine in this part of Alabama were stripped many years ago by charcoal burners who found sale for their products at the iron furnaces. The mining of iron in this region was stimulated during the civil war by demands for the metal in the South when supplies from other parts of the country were difficult to procure. The confederate ship, Tennessee, was built of Alabama iron; and large cannon foundries obtained their supplies from the same mines. Much of the iron was smelted with charcoal made from pine cut in the vicinity. To this day charcoal pits are common in the region and hills are still being cleared of pine (some other woods also) to meet the demand. Still north of the mineral belt in Alabama lies the cereal belt, where grains constitute the leading crops. This region embraces the fertile lands of the Tennessee river valley, extending entirely across the state, east and west. When the primeval forests covered the country, this was a remarkable hardwood region; but the fertility of the soil tempted the early settlers to cut the woods to make corn fields. Comparatively little of the timber was sent to market, for it was not salable at that time. However, in this region some of the best hardwoods of Alabama are still found.

Alabama is well supplied with facilities for shipping its forest products by land and water. Railroads are numerous, and they handle in a satisfactory manner the business that comes to them. The state's rivers give 1,500 miles of inland navigation, without counting the streams too small for steamers, yet large enough for a raft or for floating logs. Mobile is the gateway to the sea, and to the maritime countries of the world. It has a splendid harbor, connected by a twenty-six-foot channel with the Gulf of Mexico. The harbor always presents a busy scene, and it is seldom without two or more foreign vessels loading for distant ports. It is the confident belief of the business men of Mobile, and of the whole state, that the completion of the Panama canal will add immensely to Mobile as a shipping port and port of entry, and that new markets for the products of forest and factory will be opened on the western coast of Central and South America, as well as in the Orient.

The output of the sawmills in Alabama in 1910, according to the federal census of that year, which is the latest thus far published, was 1,465,623,000 feet. The cut was made up of eighteen species. It should be explained, however, that in some instances two or more species are grouped as one. For example, all pine is listed under the common name "yellow pine," though at least five species are included, viz., longleaf, shortleaf, loblolly, Cuban and spruce. The same method was pursued in tabulating oak lumber in the census returns. All is classed simply as oak, though it is well known that more than one species—perhaps half a dozen species—are included. The compilers of census statistics pursue that method because it is impossible to list each species of oak or pine separately, as many mills which convert them into lumber make no distinction between species. The drain upon Alabama's pine has been very heavy. In 1910 it constituted ninety per cent of the whole sawmill output. It is, therefore, evident that any lessening of the available pine supply will affect in a visible way, the state's total lumber output.

The state's timber resources are yet very large, though the drain in the past has been heavy. Decline in value need not follow decline in output. Closer utilization and preparation of the product for other markets, may more than make good all losses due to a smaller total output. This can be brought about by converting more of the rough lumber into finished product; that is, prepare it for markets which will pay more for it, and by that means sell a less quantity of forest products for more money. Farmers are learning to make more profit from a small tract of land by intensive cultivation than was realized from large tracts under the old way of growing one thing and selling it in the rough. Timber men can follow the same plan and do as well. Lumber sold as it comes from the sawmill is one commodity only; manufactured into furniture, boats, vehicles, finish, and the like, it becomes a number of products, each of which has a market of its own.

This study of the utilization of wood in Alabama was undertaken by the United States Forest Service in the hope that it would assist manufacturers and timber owners in the state in converting the wood into commodities which will be most profitable. The figures brought together and shown in the various tables should not be regarded as dry statistics, for each table tells a story of progress and success. It is an exhibit of diversified industries with the forest as the raw material and the finished products as the salable commodity. The census figures for 1910 (1,465,623,000 feet) show the timber converted in a year into lumber. The tables in this report show that nineteen industries in the state use 726,816,900 feet of rough lumber a year; and that 105,000,000 more is simply planed and is sold in that form, while the remainder is apparently disposed of in the rough form. About 36,000,000 of the 726,816,900 feet demanded by manufacturers is brought into Alabama from other states; and about 770,000,000 feet of lumber cut yearly in Alabama is used in the rough or is shipped outside the state for further manufacture.

It is a well-known economic principle that the community, region, or state which produces abundance of raw material and converts it into finished products ready for use, is more prosperous than the region which sends its half-finished product away from home to be completed. It is unnecessary to show by argument and figures the value of manufacturing concerns to a region; the facts are self-evident. Alabama is producing abundance of lumber, but about half of it is not being further manufactured in the state. Some of it, of course, is demanded for use in the rough form; but there is no reason why all necessary manufacturing can not be done in the state, thus employing home people, and keeping the money at home. Cheap power is abundant, and facilities for shipping the finished products are adequate.

WOODS USED IN ALABAMA.

Manufacturers in Alabama report the yearly use of thirty-eight woods, ranging in amounts from

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The Wood-Using Industries of Alabama

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